

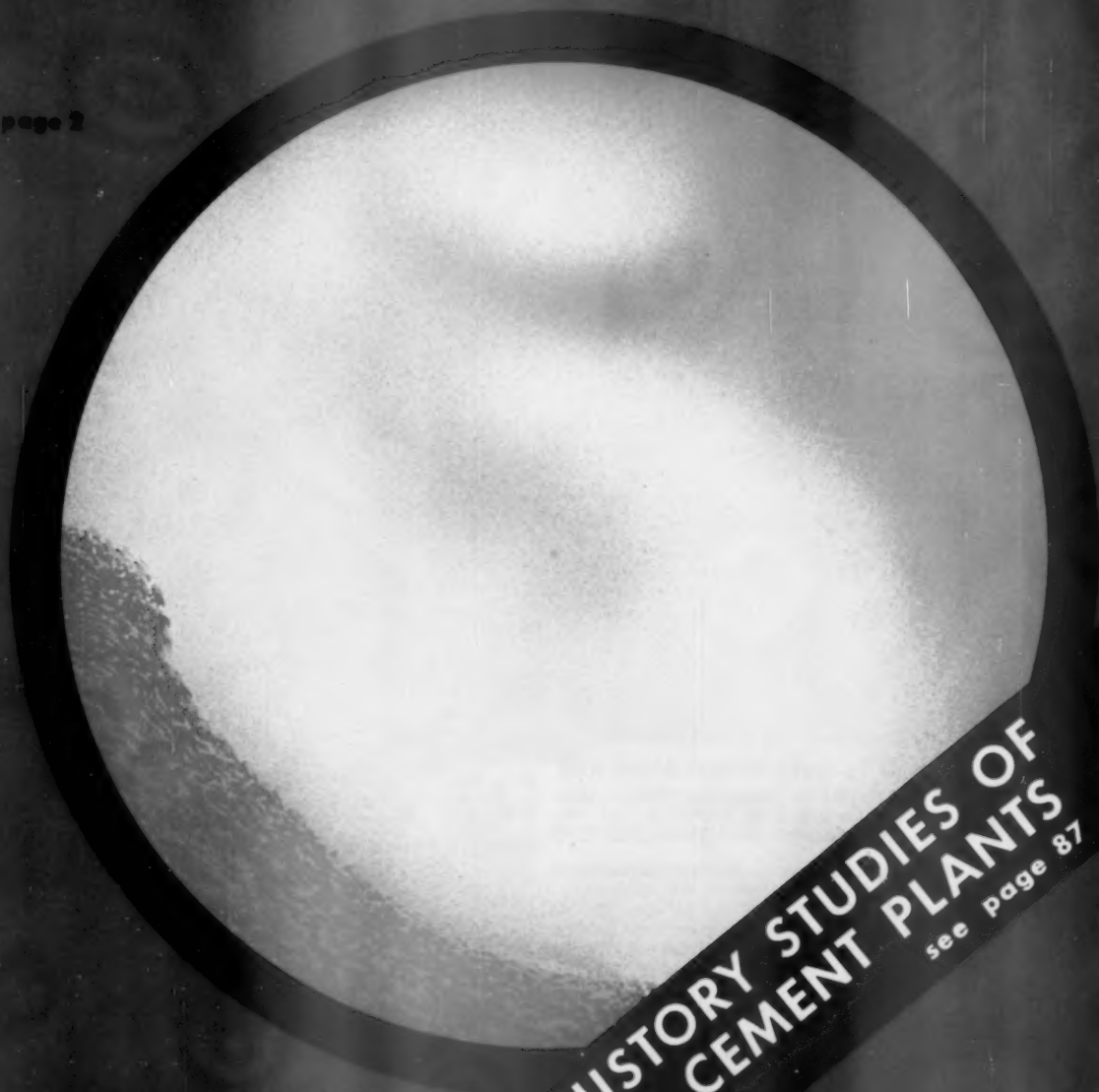
# Rock Products

MAY • 1958

THE INDUSTRY'S RECOGNIZED AUTHORITY

**Annual  
cement  
issue**

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Inside a cement kiln—a raging inferno

**CASE HISTORY STUDIES OF  
10 NEW CEMENT PLANTS**  
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# WILLIAMS ROLLER MILLS

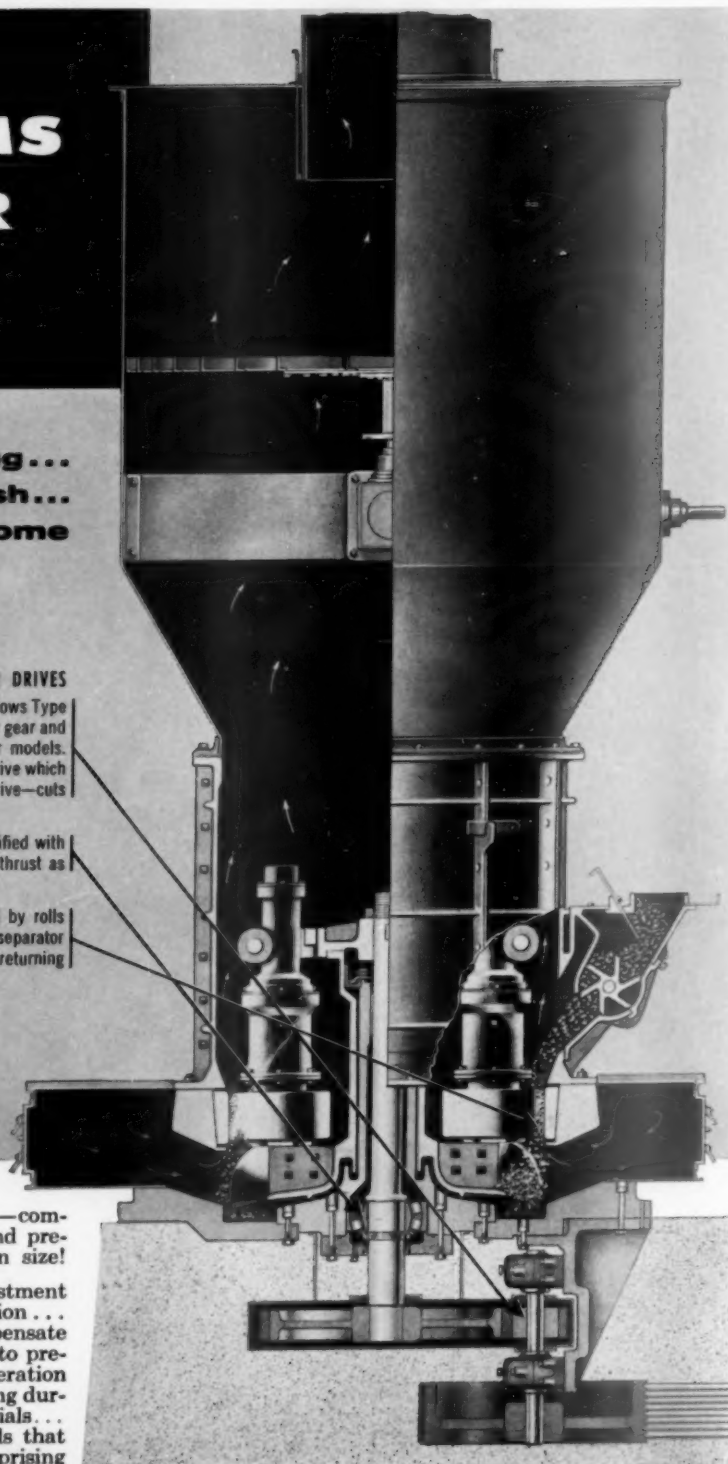
• **Quality Fine Grinding...**  
**20 Mesh To 400 Mesh...**  
**Micron Sizes On Some**  
**Materials**

## EXCLUSIVE GEARLESS AND SPUR GEAR DRIVES

Another Williams advancement! Cutaway shows Type D Mill with Spinner Air Separator with spur gear and pinion drive used on Standard and larger models. Smaller sizes have simple gearless V-belt drive which is easier to maintain than bevel gear drive—cuts labor and downtime.

Bearing alignment of central shaft is simplified with only 2 bearings, the bottom one carrying thrust as well as radial load.

NOTE FLOW OF MATERIAL being ground by rolls rotating against bull ring, then air-swept to separator which discharges finished product while returning coarse tailings for regrinding.



From raw material to finished product—completely automatic grinding, blending and precision classifying to 20 mesh or micron size!

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# Durable answer to you who have asked for a husky sectional belt conveyor



**ANSWERS STORAGE PROBLEM** — Using Link-Belt Pre-Bilt belt conveyors to stockpile material 40 feet high, this efficient layout using a radial belt stacker has overcome the restrictions of limited area. System has to operate continuously up to 60 hours, or more.

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Per pound of weight, no other sectional belt conveyor tops the strength and rigidity of Link-Belt Pre-Bilt Sectional Belt Conveyors.

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**LINK-BELT COMPANY:** Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

## From selection to erection . . . you save every step of the way with quality pre-engineered equipment

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**LOWER PURCHASING COSTS**—Interchangeability and standardization reduce costs and speed selection of parts . . . all available from Link-Belt.

**NO COSTLY DELIVERY DELAYS**—PRE-BILT conveyors are built at eight strategic locations and are shipped from the plant nearest you to assure prompt delivery.

**QUICK LOW-COST INSTALLATION**—Simple construction and shop-assembled components facilitate field assembly and installation by your own or Link-Belt erectors.

**MINIMUM OPERATING COST**—These conveyors require a minimum of power for the tonnages of materials handled. Maintenance normally consists only of lubrication.



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**B.F. Goodrich**



## How rubber chutes save \$8000 to \$10,000 a year

### *B. F. Goodrich improvements in rubber brought extra savings*

**Problem:** That black stuff pouring out of the chute was causing plenty of trouble in this zinc plant. It's a highly abrasive sinter mix—wet, hot, and so corrosive it would eat through metal. It was wearing out chutes, made from pieces of conveyor belting, in a few weeks.

**What was done:** When a B.F. Goodrich distributor heard about the problem, he recommended that the chutes be made with a special kind of B.F. Goodrich rubber sheeting, called Armorite, that's

especially compounded to stand terrific abrasion. This rubber is so tough, it's even used in some places to handle broken glass.

**Savings:** Plant men first estimated that the Armorite would last four to six times as long as the chutes previously used, and save \$8,000 to \$10,000 a year. Now they say it is lasting about 8 times as long. No more maintenance problems.

**Extra benefits:** B.F. Goodrich Armorite can be used in dozens of ways—as a

liner, curtain, throw mat or pad for protection against abrasives. Can be ordered with or without a reinforcing back of fabric, fibre or steel. It often lasts 10 times longer than steel; eliminating frequent, costly replacements of abrasion-worn metal parts.

**Where to buy:** Your B.F. Goodrich distributor has full information on Armorite. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B.F. Goodrich makes for industry. *B.F. Goodrich Industrial Products Co., Dept. M-314, Akron 18, O.*

## **B.F. Goodrich industrial products**

ROCK PRODUCTS, May, 1958

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# Increase Sand and Gravel Profits—Dig and Haul In One Operation With A SAUERMAN MACHINE

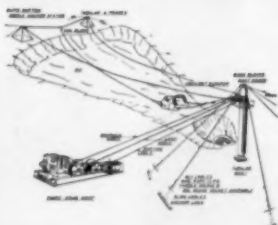
Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.

Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.

## General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation



3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.



A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ½ to 15 yds. They can be worked over spans of 1000 ft.



Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.



## Deep Digging, Underwater Recovery— Conveying to High Delivery Point



This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhauls at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

Sauerman Slackline Cableways range in size from ½ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.



Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).

# SAUERMAN

## BROS. INC.

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CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DURABILITY RIDING

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# There is nothing wasted at THOMASVILLE

15

## NORTHWESTS

owned by THOMASVILLE  
LIME & STONE CO., and  
LINCOLN STONE CO.,  
of Thomasville, Pa.  
make rock a profit  
from top to  
bottom!

AT THOMASVILLE Quarries it's like utilizing the pig at the packers. Everything is used except the squeal. Fifteen Northwests operate in this big pit. The quarry proper produces chemical stone and it takes a fleet of Northwests to produce and deliver the proper mix. This is handled by Thomasville Lime & Stone Co. The rocky overburden is loaded out by the Northwests of the Lincoln Stone Co. and fed to their crushers for building and road stone.

These two companies are old Northwest users. Thomasville has purchased eleven

Northwests and the Lincoln Stone Co. has owned eight.

Here again is another testimonial to the ability of Northwest equipment for handling tough rock digging. Your Northwest is a tough Rock Shovel — a *real* Rock Shovel with advantages that only Northwests can bring you. Ask about Northwest features. Find out why so many Northwests are in quarry work. A Northwest man will be glad to give you full details.

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Always  
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**SHOVELS**  
¾ Yd. to 2½ Yd.  
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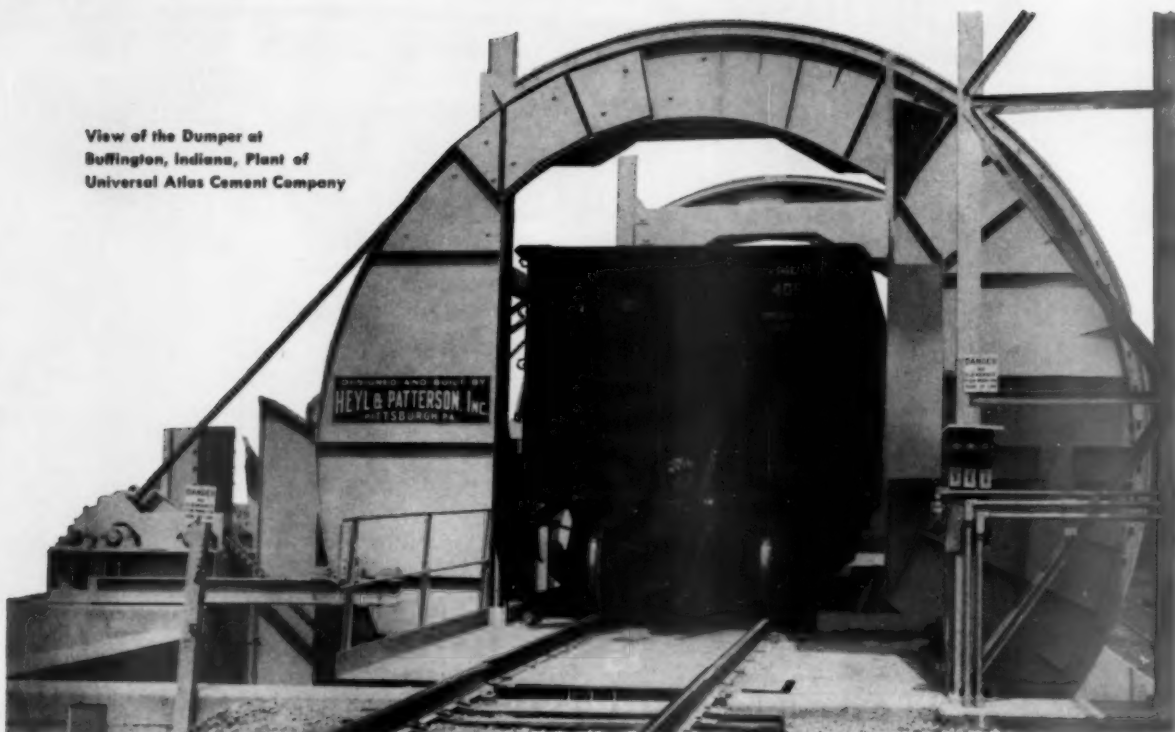
**CRANES**  
13-Ton to 50-Ton  
Capacity

**DRAGLINES**  
¾ Yd. to 3 Yd.  
Capacity

**PULLSHOVELS**  
¾ Yd. to 2½ Yd.  
Capacity

**TRUCK CRANES**  
25-Ton and 35-Ton  
Capacity

View of the Dumper at  
Burlington, Indiana, Plant of  
Universal Atlas Cement Company



## THE NEW H & P ROTARY CAR DUMPER

*unloads Bulk Materials as fast as you can deliver cars*

- Dumper is designed to rotate, dump and return to initial position in just one minute.
- Rotation can be stopped instantly at any position with car and platen firmly held in place.
- External and movable counterweights have been eliminated.
- Optional platen-mounted electronic scale is simple, accurate and economical.
- Optional car retarder on dumper permits economical and safe car spotting by dumper operator.

**MAIL COUPON TODAY FOR  
NEW DUMPER BROCHURE 957**

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IT PAYS TO WEIGH AS YOU UNLOAD your bulk materials.

The new H & P Rotary Car Dumper, equipped with electronic scale platen (Patent Pending), unloads and weighs in one operation without requiring additional personnel or separate facilities.

Integral load cells permit instant weighing and light-weighing of car in compliance with National Bureau of Standards acceptance tolerance, and printing of weigh-tickets.

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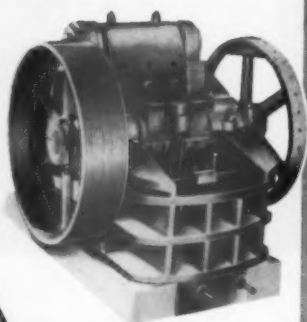
# Traylor -MADE

## for the CEMENT INDUSTRY



Traylor TC  
Gyratory  
Crusher

Traylor Type HB  
Jaw Crusher



Traylor  
Rotary Kiln

Suppliers of machinery for the cement industry  
for over fifty years.

### GYRATORY CRUSHERS

Traylor — the outstanding name in cement machinery. Traylor features a line of Gyratory Crushers, primary and secondary, that incorporate many advance design advantages. For complete information on Traylor Gyratory Crushing Machinery, state your needs and a bulletin will be speeded to you.

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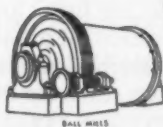
Traylor Jaw Crushers have proven their dependability and productivity in years of operations in the field. Featuring curved jaw plates, a Traylor first, these jaw crushers are made in sizes to suit the needs of the cement operator. Write to Traylor stating your crushing problem and a bulletin will be forwarded to you.

### ROTARY KILNS

Hundreds of Traylor Rotary Kilns are in daily use by many industries reflecting the soundness of design and high standards of Traylor craftsmanship. These Kilns incorporate many advance design features that will help increase your production efficiency. Write today for bulletins describing Traylor Rotary Kilns, Coolers, Slakers and Dryers.

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BALL MILLS



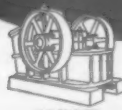
ROTARY KILNS



APRON FEEDERS



PRIMARY GYRATORY CRUSHERS



JAW CRUSHERS

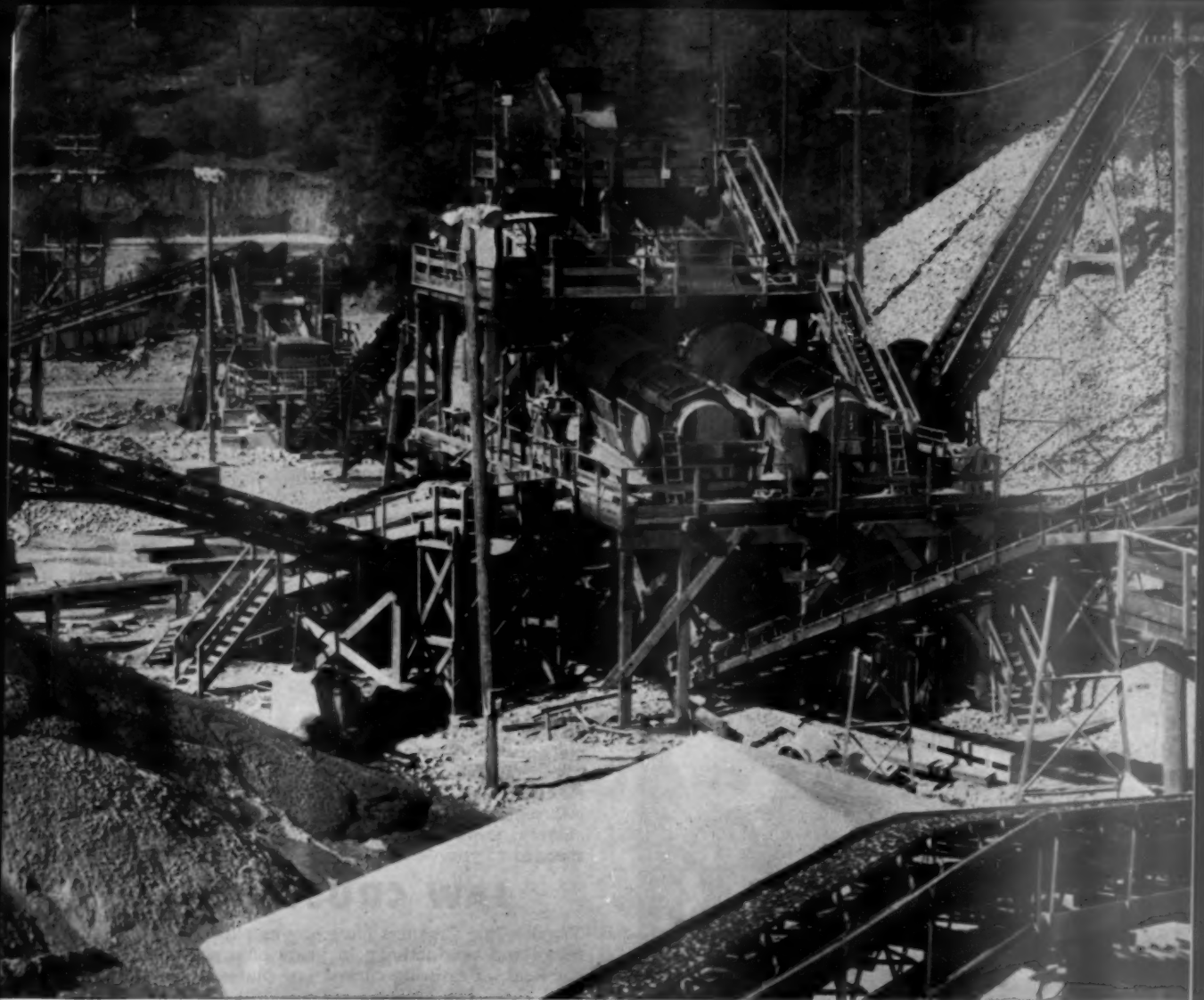


SECONDARY GYRATORY CRUSHERS

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ROCK PRODUCTS, May, 1958

# Traylor



Six Texaco lubricants can solve all your major lubrication problems with the

# Texaco Simplified Lubrication Plan

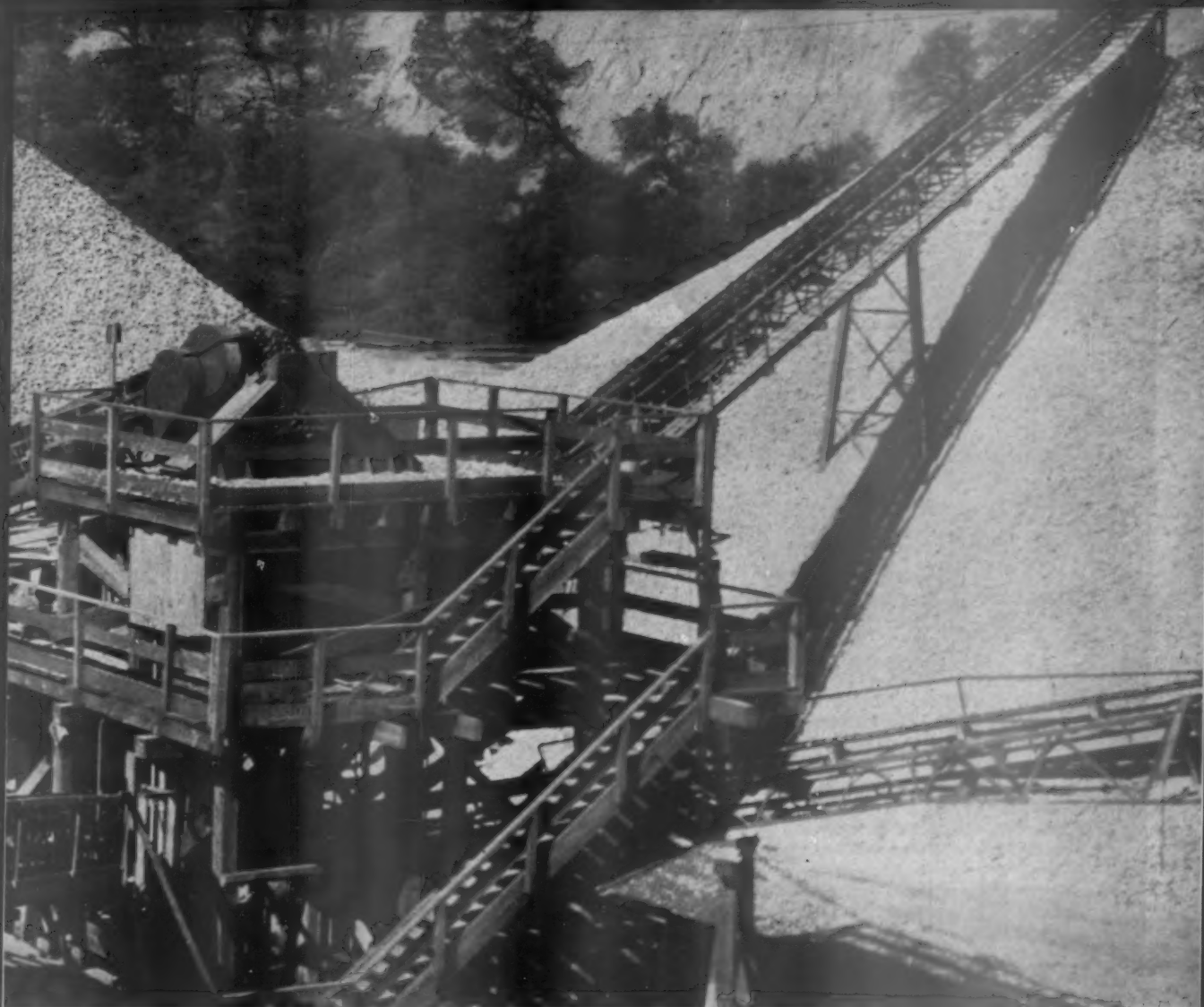
**Fewer lubricants means fewer storage, handling and inventory problems, plus complete lubrication protection.**

In a big operation like this aggregate plant, Texaco's Simplified Lubrication Plan contributes to overall efficiency by assuring that you get the *right* lubricants for all major equipment. The Texaco Simplified Lubrication Plan developed for your operation may call for as few as 6 lubri-

cants, yet they will handle all major lubrication . . . reduce storage problems, handling costs, and minimize the chance of using the wrong lubricant for the job. And the Texaco Lubrication Engineer will make sure that the lubricants you use are tailored to your operation. It all adds up to equipment that's more efficient—and systematic lubrication that's simple, time-saving and economical.

Here are some of the products that can handle





all your major lubricating problems:

**Texaco Ursa Oil Heavy Duty**, fully detergent and dispersive, to keep heavy duty gasoline and diesel engines clean and economical.

**Texaco Marfak**, has a wide temperature range, high resistance to shock loads, seals out dust and dirt, prevents rust.

**Texaco Regal Oil R&O** for air compressors and hydraulic systems, a high-grade lubricant fortified with rust and oxidation inhibitors; assures trouble-free operation.

**Texaco Universal Gear Lubricant EP**, assures long life for transmissions and differentials.

**Texaco Track Roll Lubricant**, specifically designed to protect rollers against rust and wear.

**Texaco Rock Drill Lubricant EP** for longer drill life

and full protection against rust, whether drills are running or idle.

Your local Texaco Lubrication Engineer can give you complete details on the Simplified Lubrication Plan. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



**LUBRICATION IS A MAJOR FACTOR IN COST CONTROL**  
(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



# SMIDTH

## ment coolers

The Smidth Cement Cooler, developed especially for cooling hot cement to temperatures acceptable for bulk shipment or immediate bagging, is externally water-cooled. The hot cement is introduced at the base and conveyed in a thin layer along the cooled interior surface to the top, where it is discharged. High cooling efficiency is assured by the intimate contact of cement and the water-cooled surface.

The Smidth Cooler may also be used with many other similar dry pulverized materials.

Illustrated here are two 6' 6" dia. x 17' 7" high Smidth Coolers ready for shipment.



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Bombay, India

# What's Happening

IN OTHER FIELDS OF INTEREST TO THE ROCK PRODUCTS INDUSTRY

May, 1958

**Cement that won't absorb water**—that is the discovery of Pectacrete Cement, Ltd., a British firm. The product is being manufactured and marketed in bulk through an agreement with Rugby Portland Cement Co., Ltd. Developed after eight years of research, the hydrophobic cement is achieved by spraying cement clinker during the final grinding with a chemical additive. This coating inhibits hydration until it is broken by mechanical abrasion in the presence of water. Other advantages are stressed: Pectacrete exceeds all the British requirements for strength, setting times, soundness and workability. Furthermore, concrete made with it is said to be almost completely impervious to penetration of water.

**One business barometer showed an upturn in February**—machine tool orders. The *Wall Street Journal* called the increase in orders an indicator of future industrial activity. "In the past, the machine tool industry has been among the first," it said, "to feel the pinch of a contracting economy. Similarly, it often responds early to any upward swing." Two-thirds of 17 leading tool builders interviewed tended to be optimistic over recent trends.

**Quartz in complex shapes can now be forged to order.** The forgings are made possible by a fusing process developed by Amersil Quartz Division of Engelhard Industries, Inc. The material is said to be more homogeneous, with less thermal strain and fewer and smaller bubbles. Custom-forged blanks of the fused material are available in a variety of shapes: rods, cubes, briquets, prisms—even guided missile domes shaped like cantaloupe halves.

**New markets are being found outside Canada** for an invention claiming to make motor oil last 20,000 miles without a change. The device, a tiny metal slug of calcium and sodium alloy that neutralizes acids which cause oil to deteriorate, was invented and patented by National Research Council, Ottawa. According to Ivan E. Lenard, founder of International Patented Products, a group formed to handle overseas sales, "Two or three substantial U. S. companies are interested in getting exclusive rights."

**Plant site possibilities were demonstrated** at last month's National Industrial Development Exposition, held in New York City Coliseum. More than 100 chambers of commerce, state industrial development groups and utilities disclosed what their areas had to offer in the way of location, power, transportation and taxes.

**The gross national product hit a new high in 1957**—\$434.4 billion—according to the Department of Commerce. The total value of all goods and services produced in the U. S. showed a dollar rise of about five percent, but about four percent of this was accounted for by higher prices. The 1956 total was \$414.7 billion.

A **"protective atmosphere" technique** that permits relatively dry operation of bearings in temperatures near 1,000 deg. F. has been worked out by a Shell Development team (**Chemical and Engineering News**, March 3, 1958). They sidetracked the need for high-temperature lubricants by operating nonlubricated bearings in a reducing atmosphere composed of air, hydrocarbon vapor and extreme-pressure additives—sulfur, phosphorus or halogen compounds. Best of the hydrocarbons, they found, was JP-4 jet fuel. Resins contained in the fuel break down to form a protective film on bearings.

**Adapting extreme-pressure lubrication to oil well drilling**, Gulf Oil Corp. has reduced drilling time in deep wells by 12½ to 25 percent. Working life of drill bits is lengthened two to five times and drilling torque has been cut to as low as 1/20th of the former power requirement.

An **asbestos-containing insulating material** has been developed by Johns-Manville Corp. Withstanding prolonged use at 1,300 deg. F., the material is said to surpass still air as a thermal insulator. It has been called Min-K because of its minimum conductivity of heat. J-M says that the product could save enough space in rocket applications to increase fuel capacity by 20 percent.

**Another high-temperature material** is a felted asbestos-phenolic resin material produced in laminated sheets or moldings by Continental-Diamond Fibre Corp. Parts made of the material can take continuous operation at 500 deg. and intermittent operation at 900 deg. F., the company said. It can withstand temperatures of 2,500 to 3,500 deg. F. for limited periods in the 10 to 15-second range.

**Oil sands prospecting permits have been issued** to five firms by the government of Alberta, Canada. Six parcels sold were comprised of 50,000 acres each, and a condition of the permits was that they apply only to bituminous sands. They have no effect if the permit holder discovers oil or natural gas. The oil sands are located in the McMurray area 30 miles north of Edmonton. Stretching along the Athabasca River, they have been estimated to contain from 100 to 300 billion barrels of oil.

**A new source of salt exists in pools of Pacific sea water** trapped behind high sand barriers on Mexican beaches and replenished by exceptionally high tides several times a year. Water is evaporated by sun and wind and the heavy brine is trenched by Exportadora de Sal to a lagoon 12 miles away for further evaporation.

**Walt Disney's cartoon characters are reaping profits** for their creator as they lend their services to a wide variety of companies and organizations. For example, Jiminy Cricket's bicycling antics on film are leased by American Automobile Association; DuPont sparks auto paint sales sessions with a film called "Motor Mania" and Goofy's escapades in "How To Sleep" help sell Sealy mattresses. So it just seems natural that Structural Clay Products Institute would lease the film classic, "Three Little Pigs," to aim their "build with brick" selling message at the nation's builders.

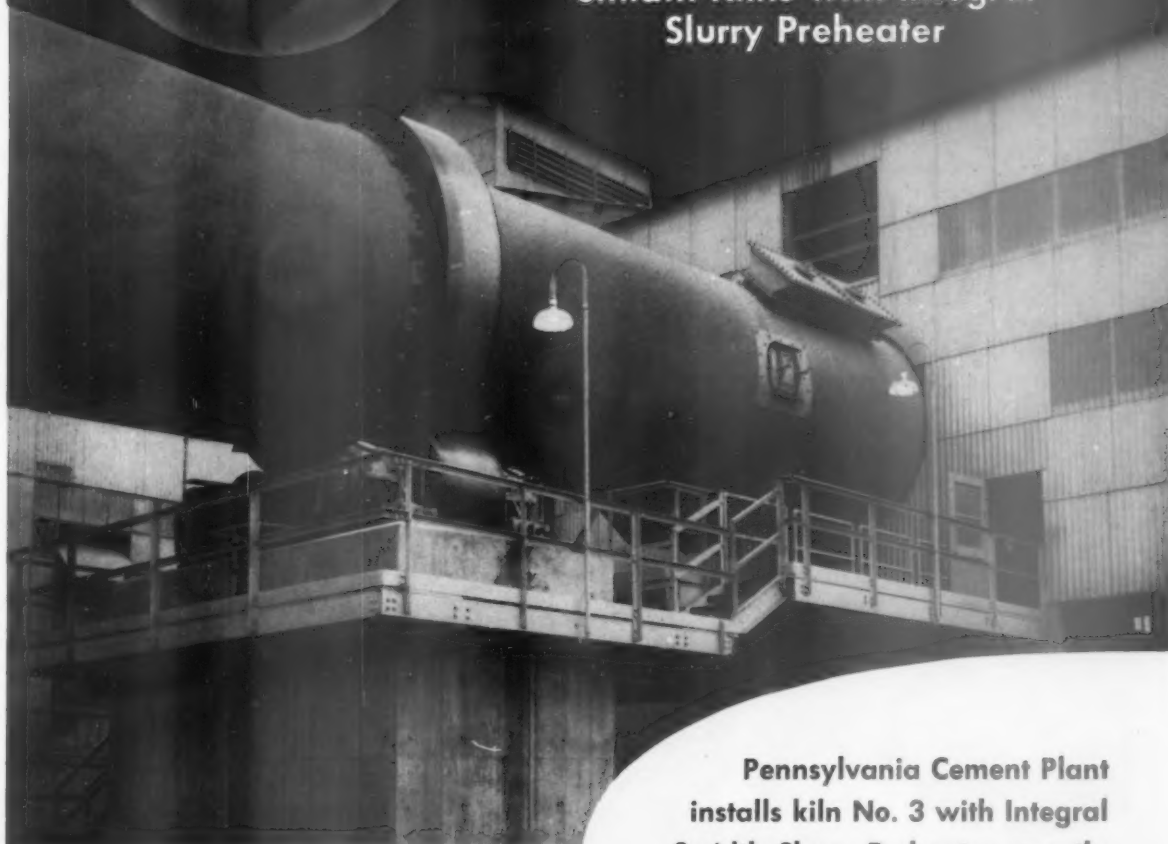
**The editors**





## REDUCE DUST... SAVE FUEL

Smidth Kilns with Integral  
Slurry Preheater



Pennsylvania Cement Plant  
installs kiln No. 3 with Integral  
Smidth Slurry Preheater, greatly  
reducing dust loss and  
fuel consumption.

# Smidth

F. L. Smidth & Co., A/S  
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Copenhagen, Denmark

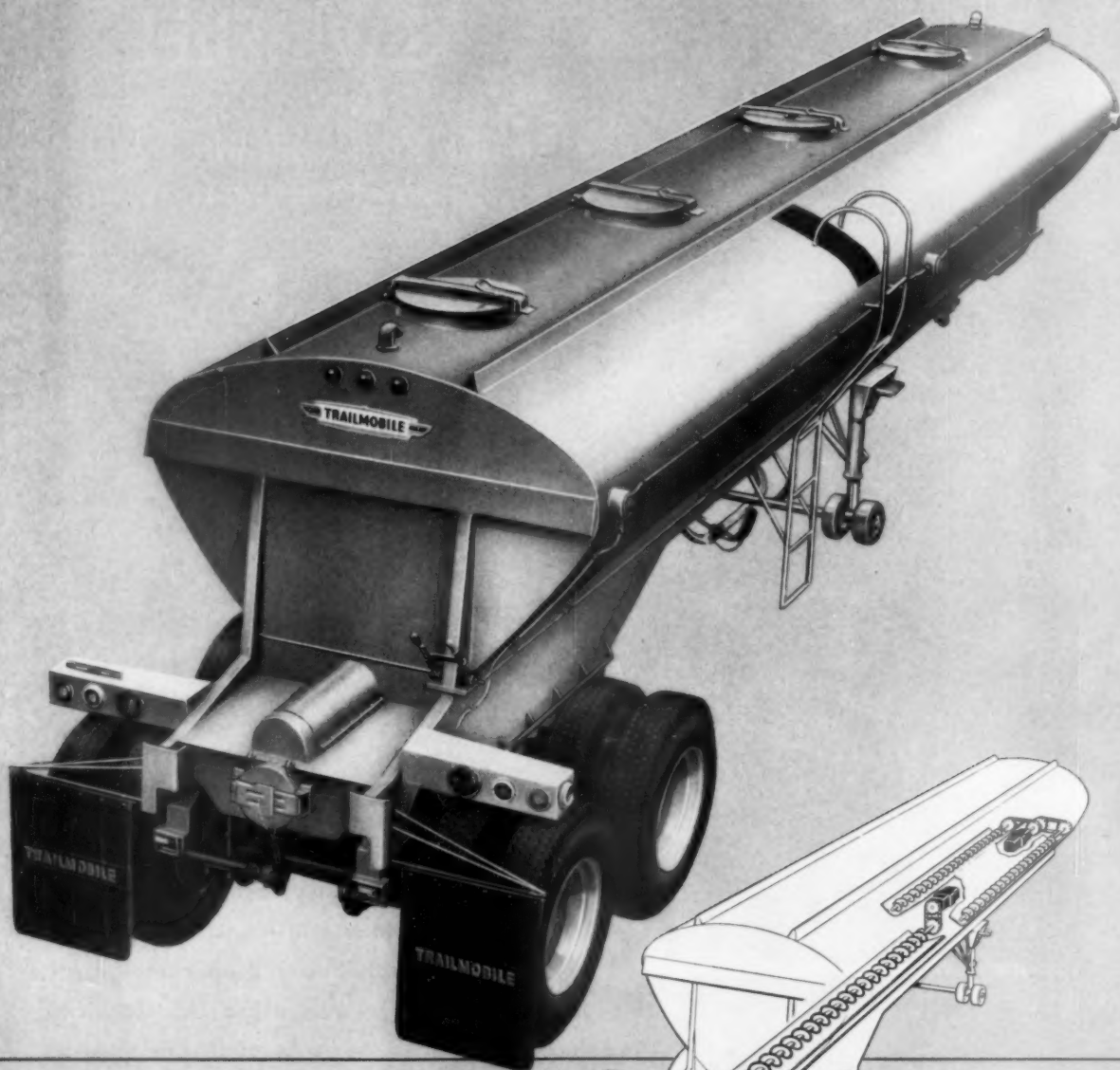
F. L. Smidth & Co.  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,  
105, Piccadilly,  
London, W. 1, England

F. L. Smidth & Cie France  
80 Rue Tailbout  
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Private Ltd.  
42 Queen's Road  
Bombay, India



**New hydraulically powered discharge system** retains famous Trailmobile 2-stage conveyor but utilizes 3 screws as shown at right. Two hydraulic motors—independently controlled—are located at the drive sprocket of the screws to eliminate the necessity of clutches, counter balances and gear reduction systems. Reversing direction of the screws permits added assurance of getting stubborn loads unloaded as well as discharge at center when center opening is provided.

# New Cement Tank Trailer

NEW shape...NEW low weight...NEW hydraulic discharge system

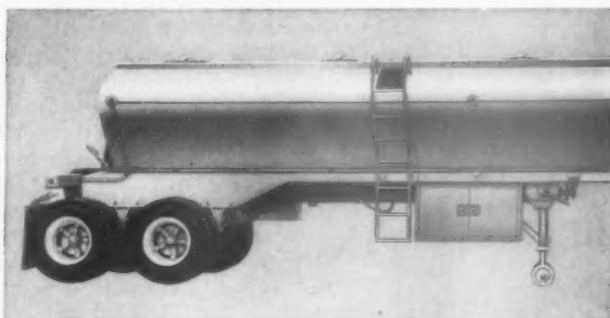
The many innovations offered in this new Trailmobile promise unprecedented advantages to operators.

Its unusually light weight provides for maximum payloads. Its simplified unloading mechanism permits precise control of screw speeds. Its overall design promises a substantial savings in maintenance.

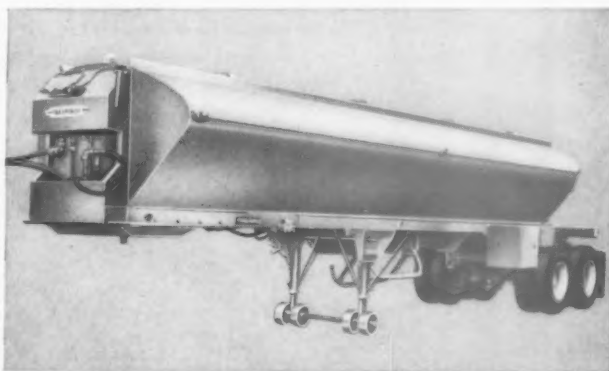
This is a lighter trailer because its vessel has a radically different shape which allows it to support as well as contain the load. It is a more versatile trailer because discharge can be accomplished over a wide range of speeds either at the rear or center of the unit—or both—according to your specifications. And it's a more dependable trailer because of a uniquely simple, close-coupled hydraulically powered discharge mechanism.

Further, you can have all these advantages in either of *two* types. One utilizes power take-off from the tractor, while the other—a self-contained unit—mounts a gas engine-driven hydraulic pump.

These are only a few of the benefits offered you in this new concept of cement tank trailer design. For the complete story contact your nearest Trailmobile representative or use the coupon.



**Self contained unit** has gas engine driven pump to energize hydraulic motors. Engine is housed in cabinet at center of unit.



**Continuous contour shape** plus reinforcing baffles and tension members cut weight without sacrifice of strength. Note the smooth clean lines of this fine trailer.

TR-702

## TRAILMOBILE INC.

Cincinnati 9, Ohio • Springfield, Missouri  
Longview, Texas • Berkeley 10, California

TRAILMOBILE INC., 31st and Robertson, Cincinnati 2, Ohio

Please send me illustrated folder containing complete information on this new lightweight cement tank.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street and No. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

# 22-Year Record

**375  
UNITS  
since  
1935**

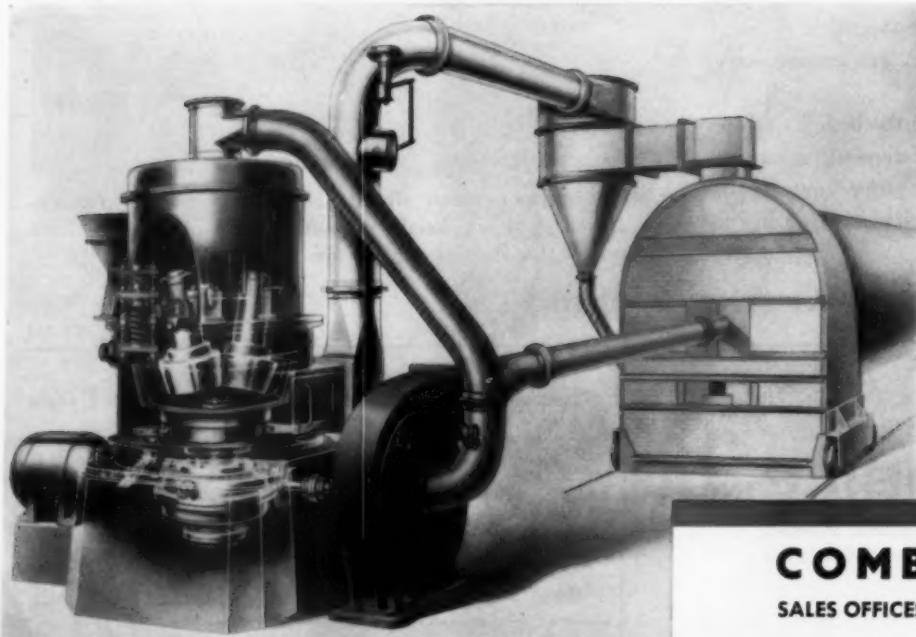
THE development of Raymond Bowl Mill firing is another success story of modern industry. Its continual growth in popularity right up to the present date is based on its dependable performance for the past 22 years.

The first experimental Bowl Mill was tested and proved under actual service conditions in 1935. The year 1936 marked the beginning of wide-spread acceptance of the Bowl Mill for direct firing rotary kilns.

The opposite page shows the rapid climb in yearly Bowl Mill output, measured in tons of coal pulverized.

From the original units installed in 1935, the list has grown to 375 mills at the end of 1957. Rated capacity has increased to more than 18-1/2 million tons of coal per year, used in kiln firing alone.

The continued leadership of the Raymond Bowl Mill is a proof of its ability to lower over-all costs and to insure top-level efficiency in kiln operations.



The Raymond Bowl Mill provides a complete fully coordinated system of coal pulverizing and direct firing for rotary kilns in production of lime and cement.

For further details,  
ask for Raymond  
Bowl Mill Catalog #75

## COMBUSTION

SALES OFFICES IN PRINCIPAL CITIES

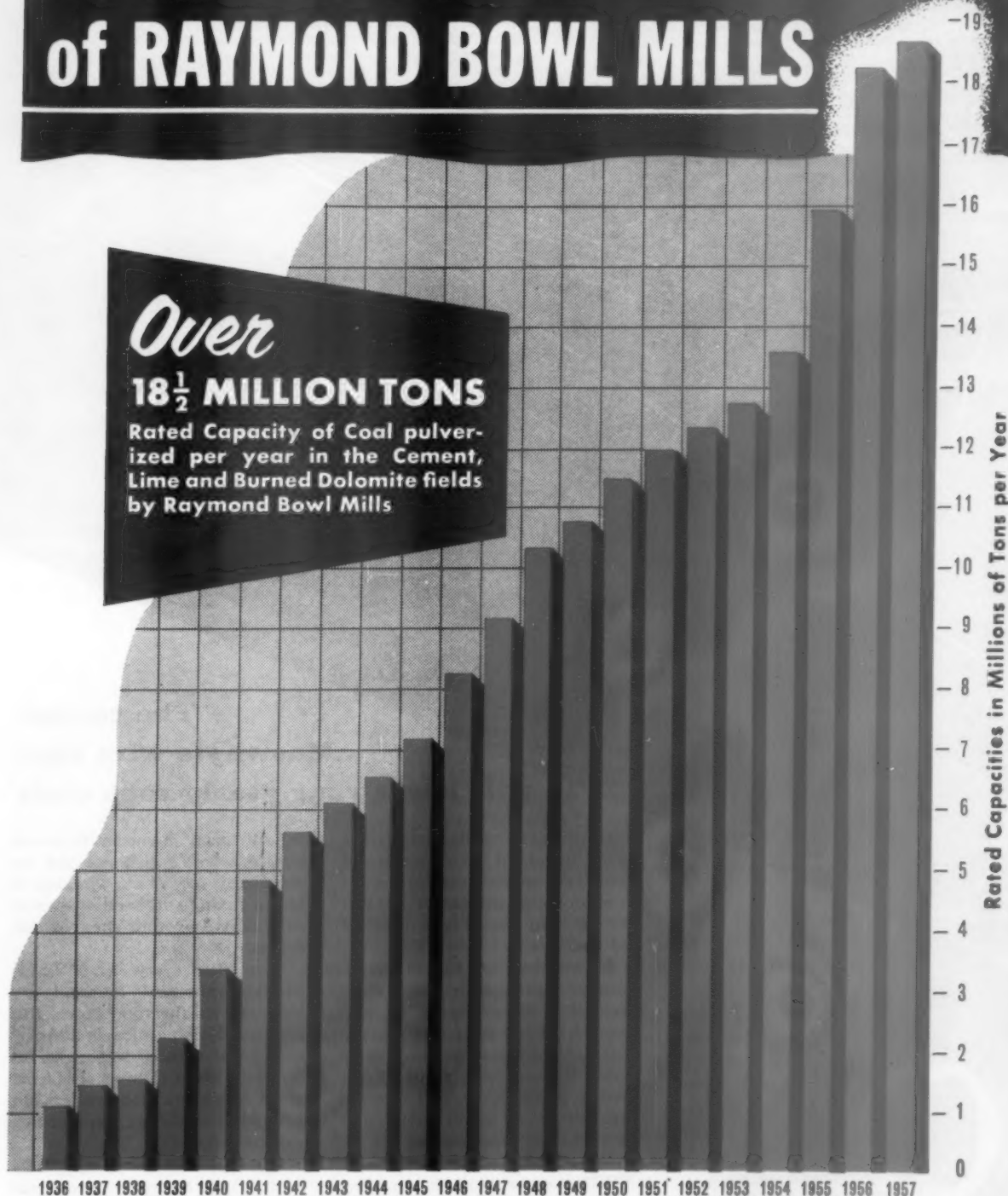


# of RAYMOND BOWL MILLS

*Over*

**18½ MILLION TONS**

Rated Capacity of Coal pulverized per year in the Cement, Lime and Burned Dolomite fields by Raymond Bowl Mills



1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957

SHOWING YEARLY GROWTH OF RAYMOND BOWL MILL FIRING

**ENGINEERING, INC.**  
**RAYMOND DIVISION**

1307 NORTH BRANCH ST., CHICAGO 22, ILLINOIS

COMBUSTION ENGINEERING-  
SUPERHEATER LTD.,  
MONTREAL, CANADA



**ONE OF A SERIES** of advertisements to help the construction industry get better service from wire rope.

**SHOVEL** Chain, Electric, or Steam Crow  
1, 2, 3, Part or Twin Main Hoist Line

#### DIPPER LATCH LINE

6 x 36G PREformed Regular Lay Whyte Strand  
Fiber Core  
8 x 19E PREformed Regular Lay Whyte Strand  
Fiber Core  
7 x 19 PREformed Aircraft Cord sizes under 1/4"

#### BOOM HOIST LINE

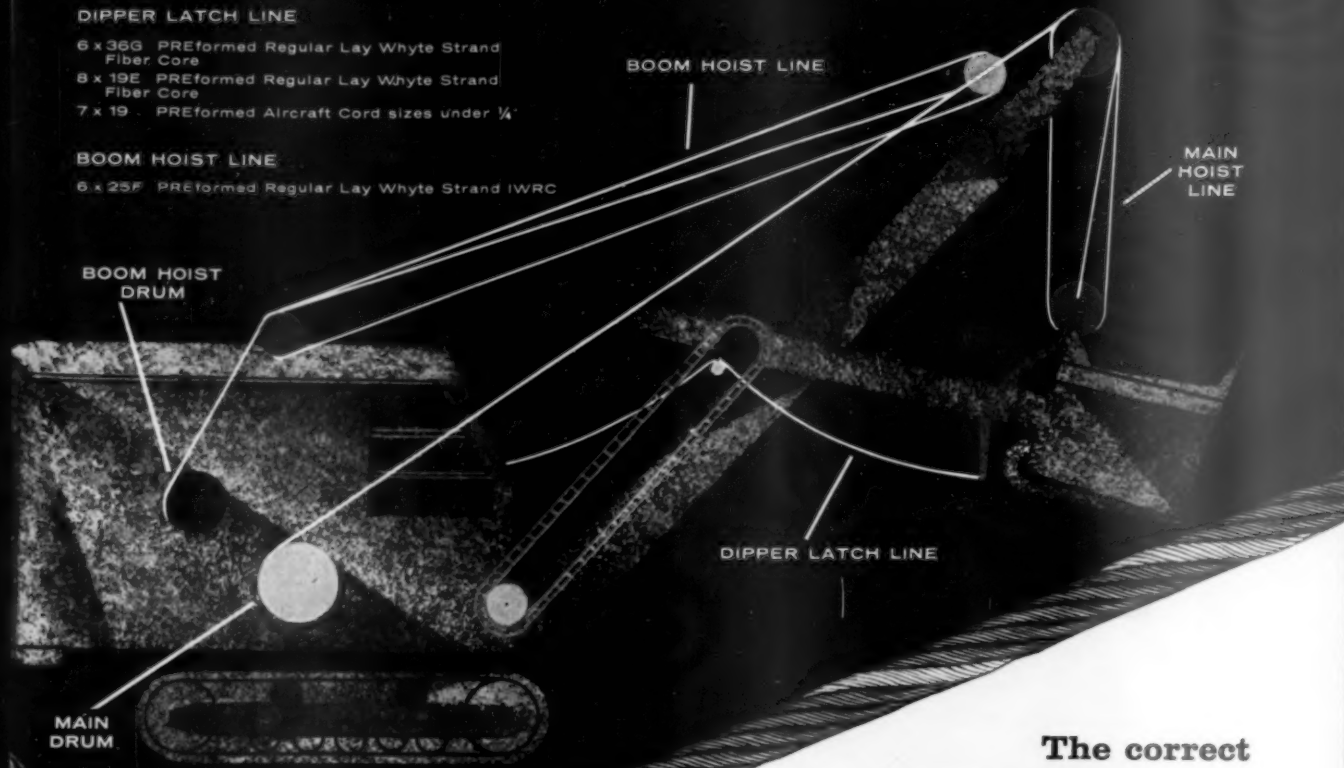
6 x 25F PREformed Regular Lay Whyte Strand IWRC

#### MAIN HOIST LINE

1/4" and 5/8" 6 x 25F PREformed Lang Lay Whyte Strand IWRC  
6 x 25F PREformed Regular Lay Whyte Strand IWRC

1/2" and Larger 6 x 25F PREformed Lang Lay Whyte Strand IWRC  
1" and Larger 6 x 41F PREformed Lang Lay Whyte Strand IWRC

\*Where sheaves or drum diameters are less than 22 times rope diameter.



## The correct Macwhyte wire rope will lower your yearly rope costs

You will make substantial savings in the amount of money you spend every year on wire rope for shovels — or any other equipment — if you use the right type of rope designed for your job.

Shown above are correct recommended wire ropes for use as main hoist line, dipper latch line, and boom hoist line on power-shovels. Each of the Macwhyte wire ropes listed is designed to shrug off the normal abuse, strain, and abrasion encountered in shovel service, and to offer exceptional service life.

Whyte Strand wire ropes are PREformed to eliminate any internal stresses in manufacture. This

is particularly important in shovel service, where rough use and reverse bends subject any wire rope to severe flexing and bending strains as it curves around sheaves and drums.

In addition, every inch of Whyte Strand wire rope is internally lubricated. As the rope flexes, this enables adjoining wires to move by each other without wear, and extends the life of the rope. The tenacious lubricant also protects the exterior strands against moisture and corrosion.

Reeve up your quarry equipment with Whyte Strand wire rope and watch rope costs drop!



# MACWHYTE Wire Rope COMPANY

#### MACWHYTE WIRE ROPE COMPANY

2986 Fourteenth Avenue, Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies. Special catalogs available.

**MILL DEPOTS:** New York 4, 35 Water St. • Pittsburgh 36, P. O. Box 10916, 353 Curry Hollow Road • Detroit 3, 75 Oakman Blvd. • Chicago 6, 228 S. Desplaines St. • St. Paul 14, 2356 Hampden Ave. • Ft. Worth 1, P. O. Box 605 • Portland 9, 1603 N. W. 14th Ave. • Seattle 4, 87 Holgate St. • San Francisco 7, 186 King St. • Los Angeles 21, 2035 Sacramento St.

### Cement industry tackles new problems

**T**HE ECONOMIC PATTERN of the cement industry has changed over the past few years, and along with that change has come some new aspects of age-old problems. But they've bolstered—rather than retarded—industry progress.

In the last decade or so, cement manufacturers faced and met the greatest production growth in their history. Do you realize that output of portland cement increased about 250 percent in 12 years ending in 1956? And that output increased every single year during the period? It isn't hard to imagine what strain such rapid expansion, particularly since the late 40's, placed on cement company management.

The rapid upswing in use of cement in concrete products—from 0.77 bbl. per U.S. person in 1945 to about 1.8 bbl. in 1957—put the finger on the industry to expand. And it did. Finally, in 1956 and 1957, new-plant construction at the highest rate in history for such a short period caused supply to catch up with demand. The big point we want to make here is that management was successful in its economic planning for such a super-colossal job. It certainly rates an A+ for its unequalled effort.

And then what happened? Having spent huge amounts of money, time and effort to get the job done by the middle 50's, industry managers came face to face with the unsavory fact that rising costs—materials, labor, taxes—were eating the lion's share of the rewards. That's apparently true, since they found it harder and harder to make a 50-cent dollar.

So—what did they do? Being proud of their industry and its important place in an expanding national economy, they knuckled down and worked out a solution to their dilemma. And they've been pretty successful in licking the problem, too.

Here's what they decided, according to what we see and hear: production efficiency had to go up and so did product quality. That's a tall order for any industry. But coming right on top of a huge expansion program—which will be going on in the future, too—it's nearly enough to put a fellow down for the count. But it didn't.

Elsewhere in this issue is a series of "case history" studies of 10 cement plants—all brand new—that were built during the 1956-1957 big-expansion period. We present them so that you can review briefly the methods used by various manufacturers in their efforts to lick these new problems we're talking about.

We hope they'll be of value to you.

**From TEXAS to CONNECTICUT . . .**

## **Repeat owners get steady pit output from Bucyrus-Erie shovels . . . You Can, Too**

These experienced quarry operators prove their satisfaction in Bucyrus-Erie with repeat purchases. They buy another on the strength of past performances of quality-built Bucyrus-Erie already setting new output standards in their pits.

Look over these on-the-job illustrations and check the comments. Then investigate WHY a Bucyrus-Erie shovel provides more working time each hour of every shift . . . more daily output. Your nearby Bucyrus-Erie distributor will gladly help you select the right size machine for your pit — capacities range from  $\frac{3}{4}$  to 4 cubic yards.

479E58C



***A Familiar Sign at Scenes of Progress***

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

"Obviously, we're satisfied," states the superintendent for New Haven Rock Co., New Haven, Conn. "The 71-B was bought on the basis of performances of our 38-B and 54-B." The 3-yd. shovel works in the Needs Gap quarry near Wallingford, loading blasted rock for hauling to the crusher plant.

"We bought our third Bucyrus-Erie 22-B on the basis of the past performance of our five-year old 22-B," says K. R. Farquhar, quarry owner, Clinton, Iowa. "That's proof enough of our satisfaction." Farquhar shifts his three  $\frac{3}{4}$ -yd. shovels from pit to pit, as needed, in a widely scattered operation. Here, two machines are loading limestone in the Clinton pit.

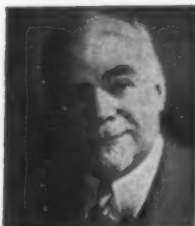
"Satisfactory in every respect" is the report from Simpson Stone Co., Clarksville, Tenn., on their  $1\frac{1}{2}$ -yd. Bucyrus-Erie 38-B. It loads granite-like limestone, including frequent removal of large boulders. A  $\frac{3}{4}$ -yd. 22-B is also used in this Clarksville pit.



"We bought the 71-B after such good operation of our 54-B and five other Bucyrus-Erie machines," comments C. R. Roth, plant engineer, Servtex Materials Co., New Braunfels, Texas. "We had the 54-B for seven years in rough work with very little trouble." The 3-yd. 71-B works in the quarry loading trucks with stone for the crusher.







## Possibly world's biggest quarry operation?

**F**EW PEOPLE WHO READ, listen to radio or watch television can be unaware of the nervous tension experienced by the present inhabitants of our earthly planet. The natural rivalry between scientific brains to gain precedence in new discoveries and developments is accentuated by fear that some such new developments may be put to destructive uses, over which mankind as a whole may lose all control. The domestic situation is further complicated by the desire of rival politicians, in an election year, to make capital of the fears and ignorance of the general public.

Add to all this, international propaganda designed to create universal fear, and we have a rather confused conception of what is, may be, or is not within the range of possibilities. For example, many believe that these experimental explosions of atomic bombs—that is, the release of what seems to be an enormous amount of nuclear energy—may be affecting climate or weather conditions. However, we are assured by some experts that this is not so, except perhaps very locally under unusual conditions. We are told that in comparison with the daily release of energy of other sources in Nature, the largest nuclear explosions are puny.

Nevertheless, weather changes or control are not out of range of possibilities, according to Dr. Edward Teller and Dr. Albert Latter, in an article in *This Week Magazine*, March 9, 1958. They are experts who are presumed to know as much as anyone on this particular subject. Their conclusions are somewhat as follows: "If small causes may have big effects [as it appears] then even puny means available to man may change the weather—provided he knows how and where to apply the lever. Even the whole planet may prove too small for fiercely conflicting interests when

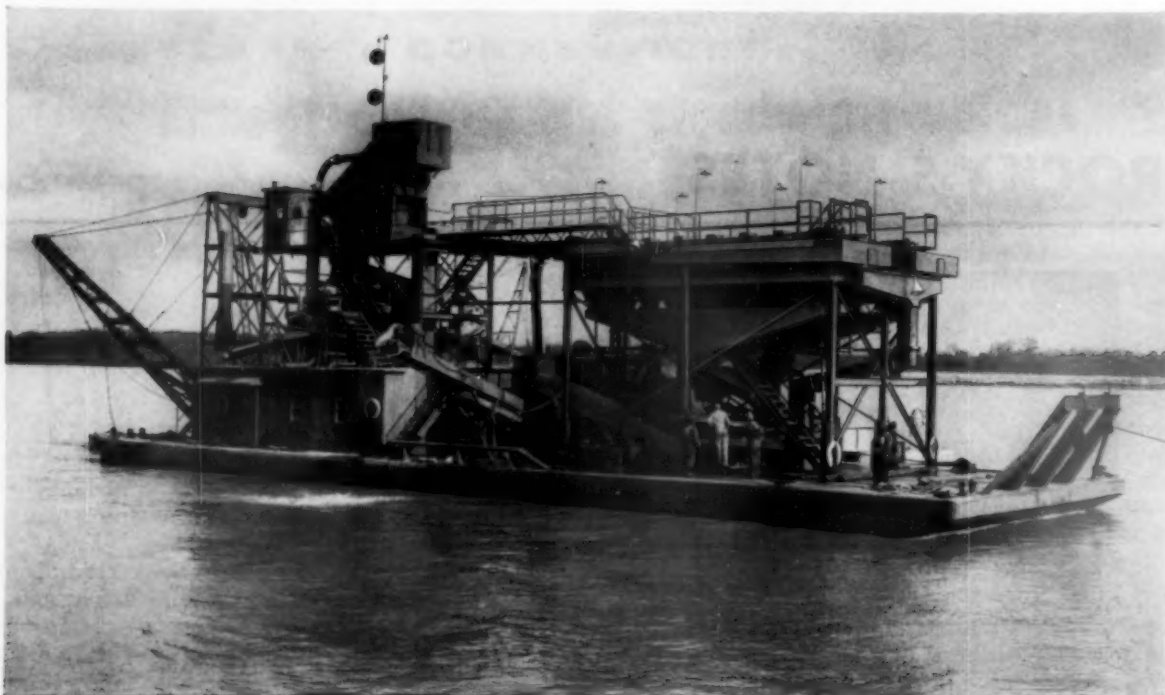
more knowing fingers are placed on more sensitive triggers."

Among other dire threats we have read about in the popular press is that the Russians have devised a scheme to render their vast area in the arctic or near-arctic North, now practically uninhabitable because of permafrost, not only habitable but agriculturally productive by use of some kind of radiation, either from the sun or nuclear reaction. The threat seems to be that in doing this they could so change the climate of much of North America, as to render it less inhabitable. Whether there is anything to this possibility or not, it reminded us of a little book, published in New York in 1912, and given this writer to review, when he was a member of the editorial staff of *Engineering News*.

The title of this book is rather large for its size, but descriptive of its contents. This title and subtitles read: "Power and Control of the Gulf Stream—how it regulates the climates, heat and light of the world—by protecting the warm north-flowing Gulf Stream from the onslaughts of the ice-cold, south-flowing Labrador Current, man can control all—cause and effects of ocean currents, the equatorial and the polar forces." The author was a Brooklynite who signed himself "Carroll Livingston Riker, M.E.," and claimed to be a pioneer in the commercial refrigeration industry. To cap the climax he dedicated his book "to him who now holds the power to physically control the world, its climates, its heat and its light—His Royal Highness and Imperial Majesty, King George V" (of Great Britain, Queen Elizabeth's grandfather).

The consensus of the opinions of the *Engineering News* editors of that day was that the author was a "nut" or as they say now a "screwball," and the review we published was a polite but positive opinion that the scheme was indeed fantastic. Re-reading the book now, after a lapse of some 46 years, in the light of subsequent developments in

Please turn to page 172



## DREDGE MOUNTED EAGLE SAND PROCESSING SECTION SAVES 3 WAYS

### For Federal Materials Co., Paducah, Kentucky

The Eagle Sand Processing Section installed on the Ohio river dredge of Federal Materials Co., consists of a double Water Scalping-Classifying Tank, two Double Screw Washer-Classifiers-Dehydrators and two Single Screw Coarse Material Washer-Dewaterers. This floating installation saves three ways for them:

- Pay loads on transfer barges are increased by 10% to 15% since materials are dewatered before loading into barges.
- Greater retention of fine mesh material is provided.
- Overage of excess meshes to be wasted is removed and only material of desired specification is loaded onto barges for transportation.

Ashore or afloat, you can't beat Eagle Equipment for efficient, economical materials washing, classifying and dewatering.

Send for NEW 48-Page Catalog 58  
Fill out coupon, affix to post card  
or your letterhead and mail today!



## EAGLE IRON WORKS

ENGINEERS • MANUFACTURERS  
137 HOLCOMB AVE., DES MOINES, IOWA

Enter 1151 on Reader Card



### For Pine Bluff (Ark.) Sand & Gravel Co.

A dredge mounted Eagle Sand Processing Section has been turning out specification material for five years. Much of Pine Bluff's material is used at their ready-mix concrete plant. A number of operators are using dredge mounted Eagle Equipment successfully.

Eagle Iron Works  
Des Moines, Iowa

Please send me a copy of Catalog 58

Name

Company

Address

City  State



# Washington Letter

Edgar Poe

## Attack on Recession

The rock products industries, because of increased demands for those products, should encounter favorable conditions in the months ahead. The Republican administration and the Democratic-controlled Congress have joined in an all-out attack on the recession.

Rock producers will feel the effects of the stepped-up public works programs. This is particularly true in accelerated highway building. Many millions of additional funds will be made available to each state for fiscal 1959 (beginning July 1) for 1960 and 1961.

The accelerated highway construction bill adds \$200 million to the \$2 billion already available for use on the interstate system beginning July 1. It has these additional provisions: It makes more millions available for fiscal 1960 and 1961; it makes immediately available another \$400 million to augment \$875 million already allocated to the states this year for primary, secondary and urban roads and it contains a \$115-million loan to the states to cover their 30-percent share for these non-interstate projects. This would be repaid from future funds earmarked for the states by the Bureau of Public Roads.

The highway bill followed close on the heels of the \$1.8-billion housing program.

## Housing Stimulates Economy

If 200,000 additional new homes are built under an emergency housing program, it will greatly stimulate the economy. It will mean the expenditure of hundreds of millions of dollars for hundreds of items involved in home construction. Statisticians at the Commerce Department figure that among other things the extra housing units would use nearly 5 million sacks of cement, a billion sq. ft. of gypsum wallboard, 200 million sq. ft. of asphalt shingles and close to a billion bricks.

Building of new houses will also mean, in many instances, that new suburbs will spring up. In turn, this means building new roads to the areas. It also means the construction of new stores, schools and churches. As more and more of the countryside is being bulldozed into subdivisions, it likewise means that the price of land in the countryside will go higher.

## Land Values Rising

One of the most important features of the new interstate highway program will be the location of the interchanges. The property near the interchanges will soar in value. It is in these areas that new subdivisions are expected to spring up, because people living near the interchanges will be able to get to the "central cities" at a fast pace.

Rolling farm land in the Metropolitan Washington area in Maryland and Virginia counties is selling today from \$500 to \$700 an acre. The price of the land has been steadily rising because more and more of the land is being bought up by housing developers. Washington authorities say what is taking place in this area is typical of many other sections of the country.

## Behind-Scenes Progress

During the past 20 months, the Bureau of Public Roads and the various state highway departments have been working hand-in-glove, with minor exceptions of course, in connection with the great construction program. It has been a mighty important period for the highway industry and for the states and the Bureau of Public Roads. A great amount of progress was made.

Despite the billions that have been spent in engineering, buying of rights-of-way and actual construction, the first 20 months of the program have been disappointing to the public and to some people in the industry, particularly small contrac-



tors. They had all expected more action than actually has materialized. Many people had expected a great amount of dirt-moving activity and paving. Officials of the Bureau of Public Roads said they did not realize it takes up to 21 months or so to plan highway location, acquire rights-of-way, do the engineering and design, prepare plans and specifications, advertise and award contracts. Then construction time requires another 12 to 24 months before a section of highway is ready for the motorist to drive on.

Major General Louis W. Prentiss (ret.), executive vice president of the American Road Builders' Association, said that in 1956 money paid to contractors totaled \$3.6 billion. In 1957 it amounted to about \$4.2 billion, an increase of \$600 million over the previous year. However, the 1957 costs were up about 10 percent over 1956.

"Also we must realize," says General Prentiss, "that of the \$5.9-billion 1957 road program, \$1.3 billion was spent on rights-of-way acquisitions and engineering. Although this unprecedented expenditure for these services contributed toward making 1957 a record highway year and will have its impact in 1958 in increased construction volume, it built no miles of highways and made no contribution to industry sales in 1957."

#### **ARBA Task Force Study**

A "Task Force" of the American Road Builders' Association, composed of nine outstanding highway contractors, made an exhaustive study of the existing contractor forces and equipment, together with their capability of expansion. Executive Vice President L. W. Prentiss said that their findings showed:

Highway contractors in 1955 operated at 49 percent of capacity: present organizations and equipment can support a \$7-billion net construction program; contractor organizations can expand to support a \$10.8-billion program in 1 year, \$11.9-billion in 3 years, and a \$12.3-billion program in 5 years.

The significance of these findings, said General Prentiss, is that until the program reaches an annual level of \$7 billion of net construction, the demand for equipment will be largely for replacement rather than expansion.

Meantime, there is more road construction underway this spring than at any time in the history of the nation. All over the country construction contracts are being let almost every day. A year from now there will be substantially more. The long preliminary details have made stepped-up

construction possible. If Congress will provide the funds there is no doubt that the construction industry is fully capable of building the 41,000 miles of multi-laned fast expressways during the 13-year period.

#### **Tax Ruling Welcome**

The Internal Revenue Service ruling that 1958 taxpayers need not keep a bookkeeping record of the individual small expense accounts was welcomed by many people, according to members of Congress who earlier had received complaints from constituents. The day-by-day expense accounts, such as taxicab fares, luncheon and dinner costs pertaining to business need only to be accounted for to the home office. However, if an official or top employee receives a set amount, for example, \$100 a month, from the firm, but is not required to account for it to the home office and business, he is required to give an accounting to the Internal Revenue Service when he makes out his income tax in 1959 for the 1958 calendar year.

#### **Unions May Balk**

Some of the government's top labor mediators are predicting that 1958 could turn out to be a bad year for labor-management strife. Wage increase demands and expanded fringe benefits, despite business conditions, are being made by many unions in all parts of the country.

On the other hand, management for the most part has told labor that the money to meet their demands just isn't available. The unions, accustomed to wage increases, are not satisfied. James F. Finnegan, director of the Federal Mediation and Conciliation Service, said labor officials have found it easy to get pay raises and improved benefits when the economy was expanding. On the other hand, he says that when sales generally are falling and net profits declining, it is going to be next to impossible for unions to get raises. As a result there may be many work stoppages during the remainder of the year.

#### **Army buys Jap trucks**

The Pentagon is buying \$21-million worth of trucks in Japan this year to be used by U. S. Forces in the Far East. The trucks are the Japanese version of 1/4-ton, 3/4-ton and 2 1/2-ton trucks built and used by the U. S. in World War II.

END





## *Geared by FULLER...*

### *New Diamond T's for Material Service Corporation*

Hauling heavy loads into sandy, muddy construction sites is daily routine for Material Service Corporation. This well-known Chicago area supplier of construction materials and concrete products knows what this work requires of trucks: *heavy-duty components throughout!*

That's why Material Service specified Fuller 5-A-65 Transmissions in the recent purchase of Diamond T Model 830-32M Trucks.

Fuller Transmissions are designed for long and satisfactory service . . . for heavy loads, steep grades and the stress of constant shifting. Specify Fuller Transmissions wherever the "going's tough" . . . to deliver maximum horsepower through the *right* gear ratios . . . to speed work cycles at lowest cost! Get the facts from your truck manufacturer or truck dealer . . . or write Fuller Manufacturing Company for details.

Material Service Corporation's new Diamond T 830-32M's feature Fuller 5-A-65 Transmissions and Eaton-Hendrickson Tandems. Concrete pipe being loaded is typical of loads carried by this well-known construction material supplier.



FULLER MANUFACTURING CO. Transmission Division • Kalamazoo, Mich.

Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.

ROCK PRODUCTS, May, 1958

Enter 1002 on Reader Card

25

# How would you decide?

A roundup of actual day-to-day in-plant problems  
and how they were handled by management men

## Can workforce be reduced as result of mechanization?

### What Happened:

TEN YEARS AGO, the company embarked on a long-range cost-reduction program. It did this because it found that costwise, it had fallen behind its competitors. One of the reasons for costs being out of line was that

1. Sales statistical information that had heretofore been gathered by clerks in regional offices was transferred to IBM machines. This did the work of 4 or 5 clerks, whose services now were not needed.
2. In the payroll department, 35 clerks made a manual payroll reg-

the alternative offered by management to take tests for other jobs, or be laid off. The union argued that management had no right to transfer jobs done by its members, the timekeepers, to office personnel using IBM machines. The company argued:

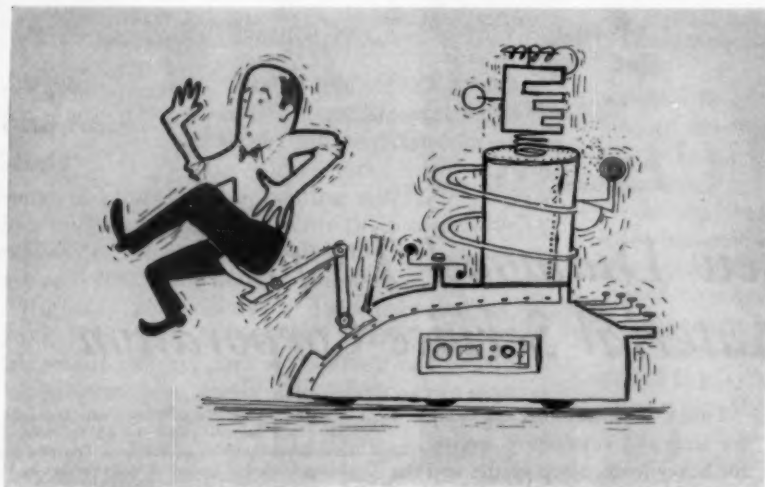
To stay competitive, we must mechanize. We are not transferring the timekeeper's work to office people. By using IBM machines, we have established a new procedure, and therefore, new jobs. The timekeeper who worked with pencil and paper has been replaced by machines. Under the general theory of "management rights" we have the prerogative to eliminate or create work tasks.

Was the Company:  
Right? ☐ Wrong? ☐

### What Arbitrator Pigors ruled:

"Is the union correct in saying that the additional work now done by office personnel is the same work that was formerly done by timekeepers in the bargaining unit? It is evident that the work, as now performed, is different. For example, 'mark-sensing' has been eliminated. More effective utilization of keypunch equipment and other mechanized processes enable management to originate and develop automatic reports of all kinds which would have been uneconomical by manual methods. This is not a question of saving a little money at the expense of the timekeepers. The objective is to strengthen the company's competitive position and by so doing, make sure that there will be ample work opportunities for all concerned, members of the union and management." Grievance denied.

(Continued on page 28)



in many areas, the competitors had changed over to mechanical equipment controls instead of hand operations. It followed suit by utilizing IBM equipment. For example:

Each incident given in this department is taken from a true-life grievance which went to arbitration. Names of some principals involved have been changed for obvious reasons. Readers who want the source of any of these cases may write to Rock Products.

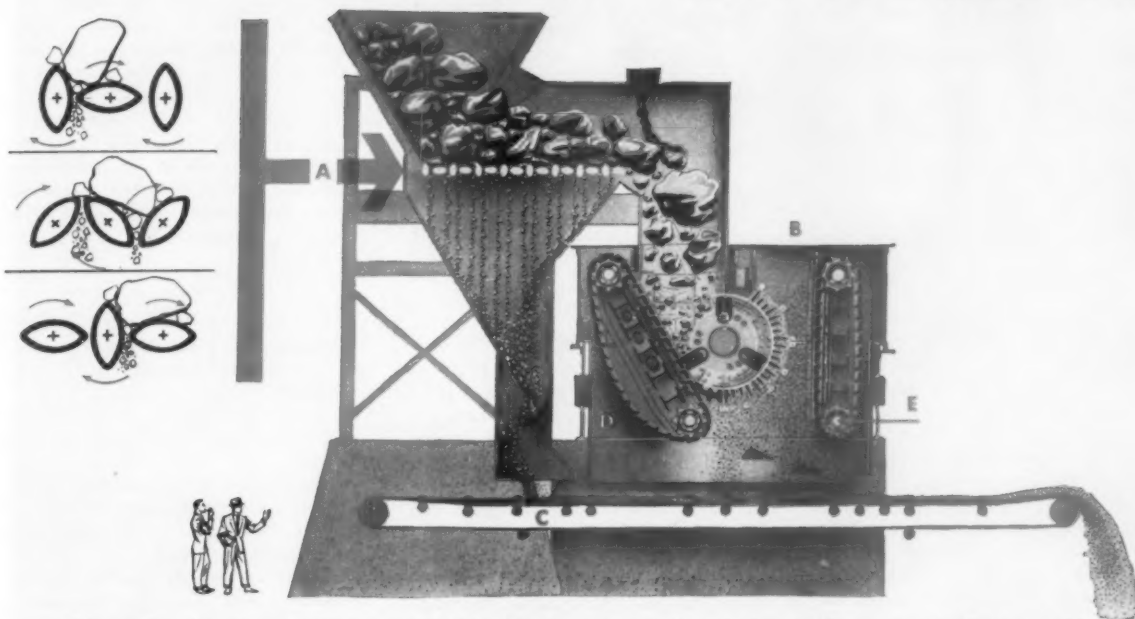
ister, using job tickets which were produced by timekeepers. By mechanizing, 30 clerks were let go, more casualties of automation.

3. Then they extended the modernization of its timekeeping procedures by introducing key-punching. This led to a reduction of timekeepers from 15 to 9.

The six timekeepers were members of the union. They refused to consider

# new feeder-hammermill combination

*makes possible 50 to 100% capacity increases*



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The Universal Wobbler Feeder (A) feeds the Bulldog Hammermill (B). Elliptical-shaped Wobbler bars are set in alternate vertical and horizontal positions to form the feeder bed. Turning of the bars imparts a rocking, tumbling motion to the load. Mud and clay are worked loose, fines sift through bars and drop to under-conveyor (C) oversize is delivered to the Hammermill. Wobbler operates on 15 to 25 h.p.

Bulldog Hammermills feature a traveling breaker

plate (D) and cleaning bar (E) eliminating build up of material in breaking chamber. Regardless of moisture, a Bulldog Hammermill keeps your crushing operation going without clogging or jamming in wet, sticky material.

This is why you can increase your production up to 100%. The Wobbler Feeder sends only oversize to the Bulldog Hammermill. Thus, the Bulldog can handle more loads per day, produce more finished material. And you get double non-clog protection by the scalping effect of the Wobbler Feeder and the non-clog moving breaker plate on the Bulldog Hammermill.

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- CONVEYORS
- SCREENS
- BINS

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ROCK PRODUCTS, May, 1958

27

## Labor Relations

continued from page 26

### When can't an employee be fired for refusing to obey?



#### What Happened:

**B**ILL GALPOLI was transferred to a job he didn't like, but instead of speaking up to his foreman, he just sulked. However, one day he did walk up to his boss and say, "I don't like this job. I'm not going to do it." The foreman ordered Galpoli back to his job, and when the employee balked, he was fired. The case came to arbitration on the grounds that the employee really didn't refuse an assignment—but just registered a complaint. Management defended the foreman and argued that if a business is to be run properly, employees must obey orders and use the grievance machinery if they have a complaint.

Was the company:  
Right? ☐ Wrong? ☐

#### What Arbitrator Merrill ruled:

"The foreman did not inquire of the grievant as to why he wished to be taken off the job. He did not call the shop steward, who might have succeeded in ironing the matter out. The shop steward, as I have said, impressed me very favorably. He indicated that his advice to the grievant would have been to follow orders. He also indicated that he thought the grievant was confused and misunderstood the situation. Assistance by the steward might well have kept the situation from crystalizing as it did. I order the employee reinstated."

### Can you fire a man if other workers refuse to work with him?



#### What Happened:

**H** WAS A MAINTENANCE MAN with a good record of workmanship and attendance. One day, a witness before the House Committee On Un-Ameri-

can Activities charged that H had been a member of the Communist Party. When H pleaded the Fifth Amendment before the Committee, he was fired by the company on the principle that his presence caused dissension among employees, and many of them refused to work with him. H filed a grievance and put up the following argument in his defense:

1. My refusal to testify before a Congressional Committee is none of the company's business. I have a good work record, and industrially I have done nothing to warrant being fired.
2. Employee resentment against me is not of my doing. I have a right to take the Fifth Amendment, and if that makes me unpopular,

it is not a sufficient reason for getting rid of me.

Was H:  
Right? ☐ Wrong? ☐

#### What Arbitrator Platt ruled:

"I cannot agree that employees' refusal to work with H warrants dismissal. A different holding would mean that any employee or group of employees could bring about the discharge of another through the simple expediency of refusing or threatening to refuse to work with him. If the company yielded in one instance, would it not be obliged to yield in similar instances, whether or not there were justifiable reasons? More than once the question arose as to the company's rights if an employee refuses a proper job assignment, and a clear answer was given each time. The company was not powerless to deal with the threatened refusal of a few employees to work their proper assignments." The employee was reinstated.

### Is intoxication a satisfactory explanation for not coming to work?

#### What Happened:

**T**HE COMPANY HAD A RULE—an employee could be discharged if he was "absent for three consecutive days without making a satisfactory explanation." When Brown reported for the afternoon shift, his supervisor noted that he was drunk, and in no shape to operate machinery. The foreman told Brown to go home, and come back the next day. In order to protect Brown, the foreman marked "ill" on the record sheet, instead of "intoxicated." Brown didn't show up for three days. He was fired for not having a satisfactory explanation for not coming to work. Brown didn't deny his intoxication, but he maintained that this was an illness, not a vice, and therefore was a satisfactory explanation. To further bolster his case, he pointed to the foreman's record, which noted that he was "ill."

Was the Worker:  
Right? ☐ Wrong? ☐

#### What Arbitrator Shister ruled:

"Brown was not ill in the accepted meaning of the term, and therefore his condition could not be accepted as a satisfactory explanation. Grievance denied."

END

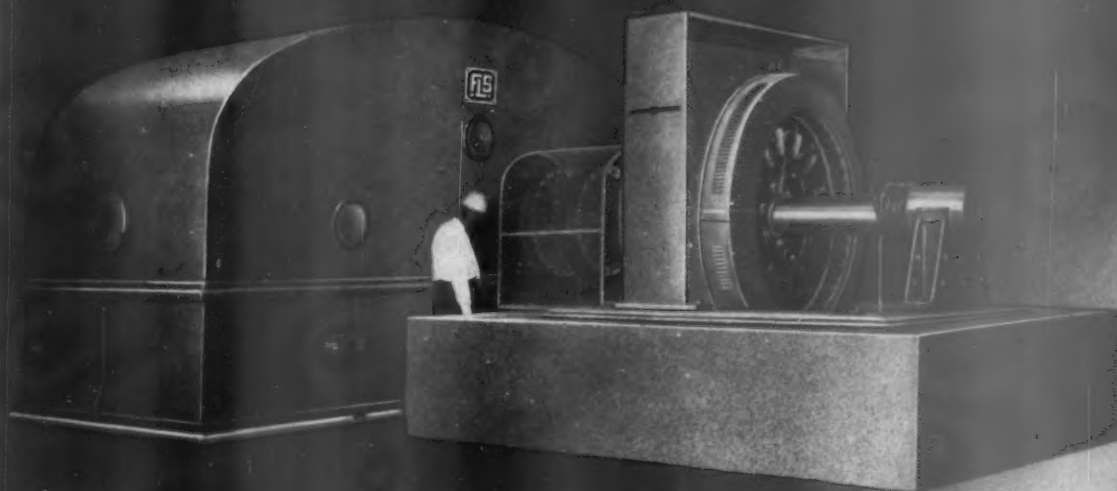




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# PEOPLE

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## IN THE NEWS



### Riverside vice president

DAVID C. HONEY has been elected vice president of manufacturing for the Riverside Cement Co., division of American Cement Corp., Los Angeles, Calif., and will be in charge of manufacturing operations at the Riverside and Oro Grande plants. Mr. Honey joined Riverside Cement Co. in 1954 as assistant to the general manager. In 1956 he became assistant to the vice president and general manager and in 1957 he was named assistant to the president.

### Industrial relations manager

BRADFIELD SCRANTON has been named industrial relations manager of Keasbey & Mattison Co., Ambler, Pa., producers of asbestos and magnesia products. A graduate of Columbia University, New York, N.Y., with B.S. and M.S. degrees, Mr. Scranton served as assistant manager of industrial relations for Penn-Dixie Cement Corp., Nazareth, Pa., prior to joining Keasbey & Mattison Co.

### Joins Janesville gravel firm

LOY C. MONTGOMERY has been appointed assistant to the president of the Janesville Sand & Gravel Co., Janesville, Wis., according to an announcement by Ellis E. Jensen, president of the firm. Mr. Montgomery resigned as executive vice president and general manager of the Fifield Lumber Co. to accept the position.

### Zonolite president

J. A. KELLEY has been elected president of the Zonolite Co., Chicago, Ill. He succeeds J. B. Myers, who has resigned but will continue with the company as a consultant. Mr. Kelley joined Zonolite Co. in 1946 and was placed in charge of the mining and milling developments in South Carolina, and the installation and operation of plants in the south and central south areas. He also managed sales activities in these sections. In 1953, Mr. Kelley became a vice president and in 1956 was named executive vice president in charge of all plants and mines, including the vermiculite deposit at Libby, Mont.

### Construction engineer

J. WILLIAM HERRMANN has been appointed construction engineer of The General Crushed Stone Co., Easton, Pa. A graduate of Syracuse University, Syracuse, N.Y., Mr. Herrmann has been associated with the firm since June 1957.

### Managing director

DEREK V. DAMERELL has been appointed managing director of Western Gypsum Products, Ltd., and director of the wholly owned subsidiary, Westroc Industries, Ltd. He was formerly managing director of The Gotham Co., Ltd., Thomas McGhee Co., Ltd., and Longmeg Plaster and Mineral Co., Ltd. He was also a director of British Plasterboard Manufacturing, Ltd. and Perlite SPA in Italy.

### California Mines chief retires

OLAF P. JENKINS has retired as chief of the California Division of Mines after nearly 29 years of service. Dr. Jenkins served as chief geologist of the geologic branch from 1929 to 1947, at which time he was appointed state mineralogist and chief of the division of mines. Since 1947 the division, under Dr. Jenkins, has become internationally known for the quantity and excellence of its publications.

Dr. Jenkins is a graduate of Stan-

ford University, with B.A., M.A. and Ph.D. degrees. Before joining the California Division of Mines, Dr. Jenkins served with geological surveys for Tennessee, Washington and Arizona. For several years he held the position of associate professor of economic geology at the State College of Washington. Upon retirement, Dr. Jenkins plans to continue with the new California geologic map, which he has under way, and do exploration work on a consulting basis.

### D. Loring Marlett heads Perlite Institute



D. LORING MARLETT, vice president of the mining and mineral products division of Great Lakes Carbon Corp., New York, N.Y., was elected president of the Perlite Institute at the association's annual meeting in Fort Lauderdale, Fla. He succeeds J. C. Kingsbury, vice president of F. E. Schundler & Co., Inc., Joliet, Ill. Norman E. Braun, operations manager of the Cleveland Gypsum Co., Cleveland, Ohio, has been named vice president.

Directors of the Institute, in addition to Mr. Kingsbury and Theron L. Lehr, general manager of Texas Lightweight Products Co., are: Frank Schaffer, president of Perlite Products Co.; O. Lewis Staerker, sales manager of the Southern Division of Tennessee Products & Chemical Corp.; and Lewis Williams, president of Perlite Industries of Arizona, Inc. Lewis Lloyd, president of Alatec Construction Service, Inc., continues as advisor to the board of directors.

(Continued on following page)

## PEOPLE IN THE NEWS

(Continued from preceding page)



### Universal Atlas treasurer

CLARENCE A. KEELEY has been elected treasurer of Universal Atlas Cement Co., New York, N.Y., succeeding Thomas E. O'Connor who has retired after 37 years of service.

Mr. Keeley, a native of Mayville, Wis., graduated from the University of Wisconsin, Madison, Wis., with a B.A. degree. He joined Universal Atlas in 1920 at Chicago as assistant western credit manager, becoming western credit manager in 1924 and assistant to the treasurer in 1930. He was appointed assistant treasurer at New York in 1939, in which capacity he has served until this appointment.

Mr. O'Connor was born in Chicago and attended De LaSalle Institute and Northwestern University, Evanston, Ill. He became western credit manager of Universal Atlas at Chicago in 1919, and was advanced to the New York office in 1924 as assistant to the treasurer. Mr. O'Connor became treasurer in 1930 and a director in 1944.

### General sales manager

JOHN J. URSCHEL has been named general sales manager of the Woodville Lime Products Co., Toledo, Ohio, in addition to his duties as assistant to the president. Mr. Urschel will supervise sales activities among the company's representatives, distributors and dealers in the eastern half of the United States and Canada.

### PCA Bureau managers

ALFRED L. PARME has been appointed manager and Walter E. Kunze, Jr., assistant manager of the structural and railways bureau of the Portland Cement Association, Chicago, Ill. Mr. Parme has served as assistant to the structural bureau manager from

1953 to 1957, and since then as consulting structural engineer. Prior to joining the PCA in 1940 he was a structural engineer with the U. S. Corps of Engineers, Binghamton, N.Y. Mr. Parme, an authority in structural engineering, has made important contributions in the fields of thin shell concrete, arch dam, prestressed concrete, and ultimate strength design.

Mr. Kunze joined the PCA as a structural engineer in the structural and railways bureau in 1952. He is a graduate of The Citadel, Charleston, S.C., with a degree in civil engineering, and of Massachusetts Institute of Technology, Cambridge, Mass.

GORDON K. RAY has been appointed manager of the highways and municipal bureau of the Portland Cement Association, succeeding Leo M. Arms, who has been named technical adviser of the bureau. Mr. Arms plans to retire on December 1, 1958.

Mr. Ray joined the PCA in 1945 as an engineer in the highways and municipal bureau, and since 1952 has held the position of consulting highway engineer. He was graduated from the University of Illinois, Urbana, Ill., with a B.S. degree in civil engineering. Mr. Ray is an associate member of the American Society of Civil Engineers, American Association of Airport Executives, and a special associate of the Highway Research Board.

Mr. Arms has served in various positions in the highways and municipal bureau of PCA since 1932. A graduate in civil engineering from the University of Missouri, Columbia, Mo., he is a recognized authority in the field of highway engineering.

### Hercules president

J. P. GILES has been elected president of Hercules Cement Co., a division of the American Cement Corp. He succeeds D. S. MacBride, who is now president of American Cement Corp. Other new Hercules division officers are: Paul J. Rutan, vice president of sales; G. M. Hatch, vice president and sales manager; W. S. Moore, vice president, metropolitan division; and G. M. Harbison, controller.

### Solite representative

ROBERT K. DUEY, formerly chief engineer, has been appointed structural engineering representative for Southern Lightweight Aggregate Corp., Richmond, Va., in Washington, Maryland and Pennsylvania. Mr. Duey is a well known engineer in the field of lightweight structural concrete with a civil engineering degree from Carnegie Institute of Technology.

### Arkansas superintendent

CHARLES C. WINNING has been appointed superintendent of the Foreman, Ark., plant now under construction by the Arkansas Cement Corp., a subsidiary of Arkansas-Louisiana Gas Co. A veteran in mineral processing, with more than 18 years' experience in the aluminum industry in Arkansas and Louisiana, Mr. Winning was formerly assistant operations superintendent of the Olin Mathieson Chemical Corp. alumina plant at Burnside, La.

### Medusa director

W. J. WORTHY, executive vice president of Medusa Portland Cement Co., Cleveland, Ohio, has been elected a director of the company. Mr. Worthy, who has been associated with Medusa for 35 years, has been executive vice president for the past five years.

### Traffic manager

PAUL E. MIGHT has been appointed traffic manager of The Gibsonburg Lime Products Co., Gibsonburg, Ohio. Mr. Might, a graduate of Bowling Green State University, Bowling Green, Ohio, has been associated with the company for the past seven years.

### National Gypsum managers

DION T. RAHILL, JR., has been appointed sales promotion manager of the National Gypsum Co., Buffalo, N.Y. He was formerly advertising manager for paint products and will be succeeded by Gordon E. Fagan. Theodore W. Crouch has been named advertising manager for acoustical products. Albert H. Fay, formerly general commodity manager, has been appointed director of the recently organized products division, and Joseph E. Seguire, who has been serving as paint merchandising manager, has been named sales manager of the new paint sales division.

### New staff member

KATHLEEN KEARNEY has joined the staff of ROCK PRODUCTS as an editorial assistant after receiving her B.S. degree in journalism from Northwestern University, Evanston, Ill.

Miss Kearney brings to ROCK PRODUCTS a fine grasp of writing and reporting techniques. She has worked on the *Daily* and *Summer Northwestern*, the student newspapers, and was a member of the editorial staff of the campus magazine.

(Continued on page 37)



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New York, New York . . . . .	OR. 9-0330
Oklahoma City, Oklahoma . . . . .	JA. 5-1587
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Philadelphia, Pennsylvania . . . . .	JE. 5-5800
Phoenix, Arizona . . . . .	AL. 8-6851
Pittsburgh, Pennsylvania . . . . .	HI. 1-5200
Portland, Oregon . . . . .	CA. 6-3621
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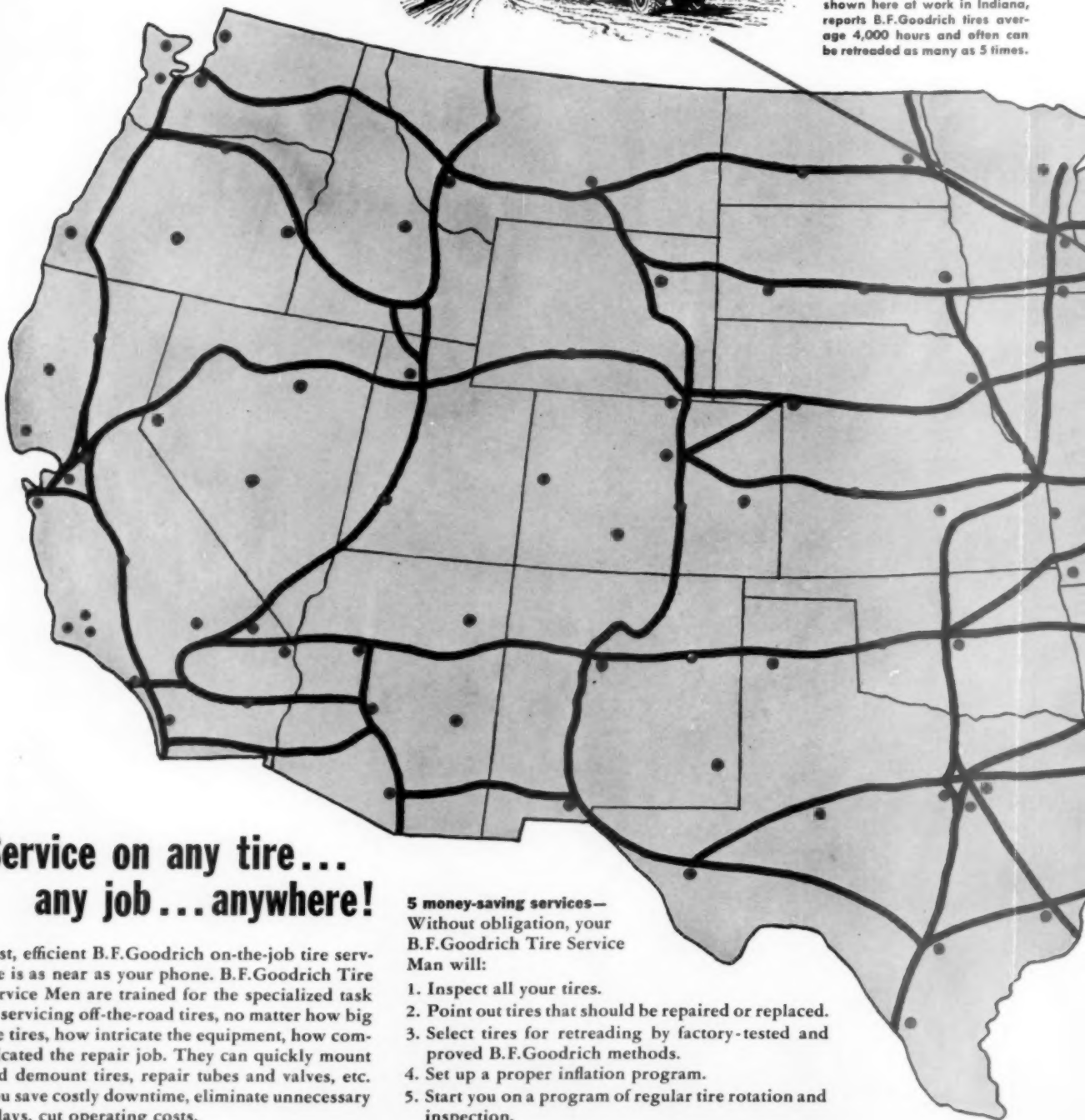
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S. J. GROVES & SONS CO., shown here at work in Indiana, reports B.F. Goodrich tires average 4,000 hours and often can be retreaded as many as 5 times.



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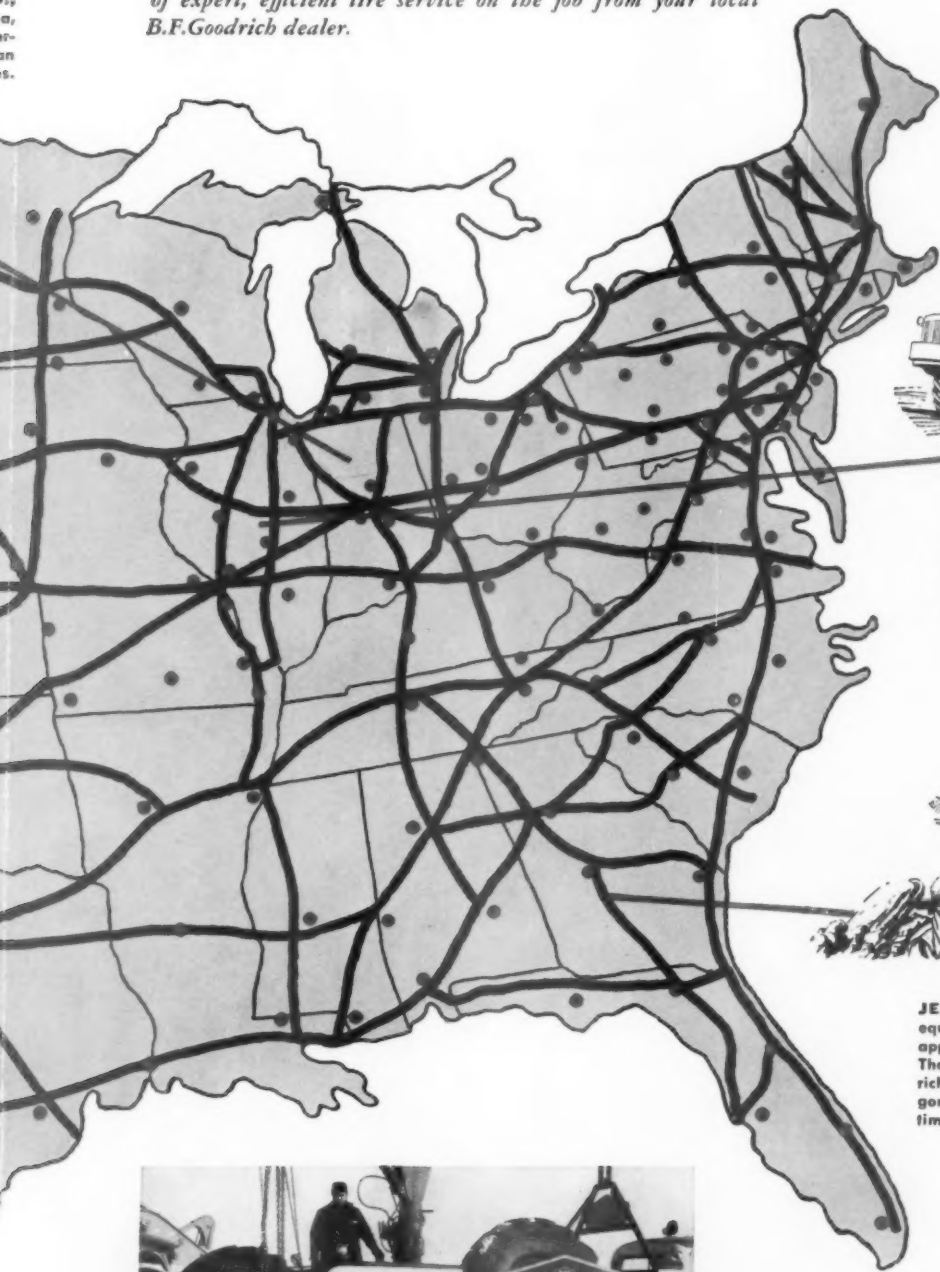
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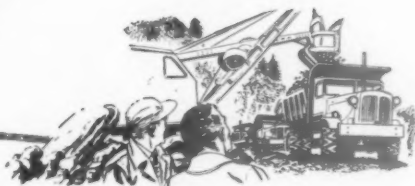
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**O'CONNOR CONSTRUCTION CO.** is turning an old road into a 4-lane highway in central Illinois, reports B.F. Goodrich tires give 6,000 hours of service, including retreads.



**JERNIGAN TRUCKING CO.** equipment hauls stone for bridge approaches near Augusta, Ga. The company reports B. F. Goodrich FLEX-RITE NYLON tires have gone over 50,000 miles—an all-time record on this operation.



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—B.F. Goodrich Servicemobiles are equipped with hydraulic crane, pneumatic wrenches, bead jacks and all of the latest power tools and devices for speedy, efficient tire service on the job.

# How 6 contractors save with B.F. Goodrich tires



**IN ILLINOIS**—CKG Associates is at work on the Northern Illinois Toll Road near Elgin. The company operates 115 vehicles, uses B.F. Goodrich FLEX-RITE NYLON Rock Service, Tractor Grader, Earth Mover Traction, Rock Logger and All-Purpose tires. Excellent on-the-job service is one reason they prefer B.F. Goodrich tires.



**IN WASHINGTON**—"We switched to B.F. Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Richard M. Ward, Truck Supt. of F. R. Hewett Co., contractors of Spokane, Wash. "They have given us up to 50% more service than the tires we used previously. We have been able to retread them too."



**IN NORTH DAKOTA**—This scraper is one of 75 units operated by Northern Improvement Co. on road projects in the Dakotas, Minnesota and Montana. The scraper weighs 35 tons loaded, works 60 to 72 hours a week. The B.F. Goodrich FLEX-RITE NYLON Super Traction tires give 5,000 hours' service before retreading!



**IN FLORIDA**—The Ralph E. Mills Company builds roads all over the world. Here the job is grading and filling on the Florida State Turnpike. The company reports B.F. Goodrich FLEX-RITE NYLON Super Traction tires work as many as 3,000 hours, thanks in part to the on-the-job service the local BFG dealer gives.



**IN MICHIGAN**—Julius Perath & Son Co. builds roads in southeastern Michigan, uses 105 pieces of equipment including trucks, cranes, dozers and graders. Because much work is in sand, Perath uses B.F. Goodrich FLEX-RITE NYLON 65" Special Earth Mover tires, reports they are "the best tires for this type of work."



**IN PENNSYLVANIA**—Gasparini Excavating Co., Inc., does highway and heavy construction work—here on the Pennsylvania Turnpike. The company finds "B.F. Goodrich FLEX-RITE NYLON tires give over 4 years' service. They minimize breakdowns and impact breaks, give maximum contract performance in the shortest contract period."





## PEOPLE IN THE NEWS

(Continued from page 32)

### Lehigh appointments

PAUL WORSECK has been named manager of safety and welfare for the Lehigh Portland Cement Co., Allentown, Pa., succeeding H. G. Collins who has retired after 31 years of service. Hallet Guth has been appointed plant manager at the Iola, Kan., plant, succeeding Walter Viebrock, who has been transferred to the Union Bridge, Md., plant on special assignment. George N. Whipple has been made plant manager at Buffalo, N.Y., succeeding J. B. Zook, who also retired.

### NCSA director

COL. HARRY H. HAAS, vice president of operations of all construction materials divisions of Houdaille Industries, Inc., New York, N.Y., was elected a member of the board of directors of the National Crushed Stone Association at the annual meeting in Chicago.

As vice president of operations of Houdaille's construction materials divisions, Col. Haas directs activities for the 28 producing units in New Jersey and Pennsylvania comprising Houdaille Construction Materials, Inc., Buffalo Crushed Stone Corp., Gravel Products Division and Concrete Products Division. Col. Haas is also a member of the board of directors of Houdaille Industries, Inc.

### Saskatchewan sales manager

E. J. CUYLER has been appointed sales manager of the Saskatchewan Cement Corp., Ltd., Regina, Saskatchewan, Canada. An engineering graduate of the University of Alberta, Mr. Cuyler holds a master's degree from the Harvard Graduate School of Business Administration. In his new position Mr. Cuyler will be responsible for the sales and marketing program of the company.

### Kaiser Gypsum appointments

EDWARD K. DENNING has been appointed insulating products manager of the northern division of Kaiser Gypsum Co., Inc., Oakland, Calif. A special salesman for the division since 1956, Mr. Denning joined the order department of Permanente Cement Co. in 1951 and transferred to Kaiser Gypsum Co. as a salesman in 1953. Wright Eshelman has been promoted to assistant controller. A native of Kansas and a graduate of the Univer-

sity of Oregon School of Business Administration, Eugene, Ore., Mr. Eshelman joined the company as cost accountant at the Long Beach plant in 1947, and was appointed office manager there in 1956.

### Marquette sales managers



Hicks

Williams

Auer

R. Y. WILLIAMS, formerly sales manager for the central division of Marquette Cement Manufacturing Co., Chicago, Ill., has been appointed regional sales manager for the northern divisions, and A. W. Hicks, formerly assistant director of sales, has been named regional sales manager for the southern divisions.

Three of the company's five cement sales subsidiaries have been absorbed into the Marquette organization, namely: Cumberland Portland Cement Co., Chattanooga, Tenn., Hermitage Portland Cement Co., Nashville, Tenn.,

and Superior-Marquette Cement Co., Columbus, Ohio.

A. J. McElrath, sales manager for Hermitage, has been appointed sales manager for the area formerly served by the Hermitage and Cumberland divisions. P. T. Crownover, vice president and sales manager for Cumberland, has retired after 37 years of service with Marquette, and Henry J. Auer, sales manager for the metropolitan Chicago area, has assumed supervision over the central division.

### C. A. Gustafson attends Safety Conference

CLARENCE A. GUSTAFSON, production manager of the Buffalo Crushed Stone Corp., Bowmansville, N.Y., was one of the delegates invited by President Eisenhower to attend the 10th Anniversary Conference on Occupational Safety, held recently in Washington, D.C. Mr. Gustafson has long been active in safety affairs for the crushed stone industry. He is a member of the National Safety Council and serves as editor of the National Crushed Stone Association publication, "Accident Review." Mr. Gustafson attended the 1954 and 1956 conferences, which are held biennially.

## OBITUARIES

**Fred O. Reedy**, president of the Kennedy-Van Saun Mfg. & Eng. Corp., Danville, Pa., passed away suddenly February 24. He was 66 years old. Mr. Reedy, who joined the company in 1920 as a production engineer, was elected a vice president in 1942 and president in 1955.

**Fredric Pickford**, secretary of the Medusa Portland Cement Co., Cleveland, Ohio, died February 26. He was 66 years old. A native of Providence, R.I., Mr. Pickford had been associated with the company for 46 years and had served as secretary since 1936.

**J. Edward Singleton**, vice president of the Glens Falls Portland Cement Co., Glens Falls, N.Y., died March 8 while vacationing in Arizona. He was 82 years old.

**Robert S. Adams**, plant manager of the Beachville plant of Gypsum, Lime and Alabastine, Canada, Ltd., Beachville, Ontario, Canada, died on January 31 at the age of 65. Mr. Adams joined the company in 1929 as superintendent of the Elora plant. He was closely associated with the growth of

the Beachville plant during the past 18 years, and was author of two papers concerning the development of the hydrate plant and shaft kilns. Mr. Adams was a graduate of Armour Institute, Chicago, Ill., with a degree in civil engineering, and a member of the Association of Professional Engineers of the Province of Ontario.

**George W. Peck**, district sales manager of the Alpha Portland Cement Co., Easton, Pa., died February 8. He was 55 years old. Prior to joining Alpha five years ago, Mr. Peck had been associated with the Cincinnati Builders Supply Co. for 15 years.

**William M. Cook**, a director of the Graham Bros. Rock & Gravel Co., Arcadia, Calif., died February 24. Mr. Cook was also a director of the Security-First National Bank of Long Beach, Calif.

**George W. Headings**, retired manager of the West Middlesex Sand Co., West Middlesex, Pa., died February 12 after a short illness. He was 71 years of age.

END

GARDNER-DENVER "AIR TRAC" DEMONSTRATION IN PRINT

**DRILLING TIME CUT 71%**



**AIR CONSUMPTION CUT 60%**



**THERE ARE 29 GARDNER-DENVER DEMONSTRATION POINTS IN THE CONSTRUCTION FIELD**  
Contact Gardner-Denver and arrange for a demonstration of Gardner-Denver drilling equipment in your quarry. Write today.

# DRILLING LABOR COSTS CUT 59%



# POWDER COSTS CUT 29%



**Quarry:** Shelbina Quarry of HALL & RILEY QUARRIES and CONSTRUCTION COMPANY, Boonville, Missouri

**Formation:** Burlington formation . . . fitchery with flint seams . . . hard to break

**Equipment:** One Gardner-Denver deluxe "Air Trac"® • One DH123 deep hole drill • Ring seal shank • Sectional drill rods • Couplings • 2 $\frac{3}{4}$ " carbide bits

**Plan for Demonstration:** 7' x 10' spacing • 24' hole depth • Number of holes—36 • Tons in shot—4500 • Holes loaded with 60% dynamite below water level and ammonium nitrate above

## HERE'S A DETAILED REPORT ON DEMONSTRATED SAVINGS

	"AIR TRAC" DEMONSTRATION	WAGON DRILLS FORMERLY USED	SAVINGS
Tons in shot	4500	4500	
Number of drills	1	2	1
Spacing	7' x 10'	4' x 7'	
Hole size	2 $\frac{3}{4}$ "	2 $\frac{1}{4}$ "	
Tons per foot	5.4	2.16	
Number of holes required	36	90	54
Lineal feet drilled	864	2160	1296
Time required to drill out	10 $\frac{1}{2}$ hrs.	18 hrs. each drill	25 $\frac{1}{2}$ hrs.
Pounds of explosives	1675	1800	
Cost per pound	15.6¢	20.5¢	4.9¢
Ton of rock per pound	2.7	2.5	
Cost explosive per ton	5.8	8.2	2.4
Powder cost	\$262.62	\$369.00	\$108.00
Drillers required	1	2	1
Drill labor cost	\$15.75	\$38.25	\$22.50
Compressor hours	10 $\frac{1}{2}$	18	7 $\frac{1}{2}$
Average air consumption per foot of hole	200 cfm.	200 cfm.	
Total air used	172,800 cu. ft.	432,000 cu. ft.	259,200 cu. ft.
Full load time on compressor	4.8 hrs.	12 hrs.	7.2 hrs.
Compressor fuel consumption (based on 10 gal. per hr.)	48 gal.	120 gal.	72 gal.
Fuel savings on 4500 tons			\$10.80



ENGINEERING FORESIGHT—PROVED ON THE JOB  
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

## GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

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# FACES AND PLACES

... Candid shots of people in the



## They sell these too

Vern Hamlin, superintendent of the Millersburg, Mich., plant of Straits Aggregate and Equipment Co., stands beside some of the big boulders which are discarded by a stone roller before they enter the plant. The roller was Mr. Hamlin's invention and was made by company welders at his direction. Rock larger than 8-in. diam. is stockpiled and sold as riprap



## Man looks at planet, describes it in speech

Dr. Joseph Kaplan, right, gave a speech at the National Sand and Gravel Association convention on activities undertaken by the U.S. in relation to the International Geophysical Year. Chairman of the U. S. National Committee for IGY, Dr. Kaplan is pictured talking with Vincent P. Ahearn, lower left, NSGA executive secretary, and H. G. Feraud, executive secretary of Southern California Rock Products Association



## Standing on the star

A five-pointed star on the lawn of Lone Star Cement Co.'s new plant at Lake Charles, La., is a reproduction of the company's official insignia. Posing on the points of the star are, left to right, William Hurst, chief chemist; Carl Dickerson, general mill foreman; George Vise (nearest camera), chief clerk; Frank McNamara, plant engineer and George Schneider, Jr., construction superintendent. In the center beside the flagpole are R. R. McBride (right) superintendent, and his assistant, Charles Lollar



## rock products industry



### Chalk up safety record

Receiving the National Sand and Gravel Association safety certificate for a year free of disabling accidents was the Felton, Calif., plant of Kaiser Sand and Gravel. Making the presentation to Harold L. Baum, right, manager, is Ivor R. Thomas, assistant to the general manager of Kaiser Sand and Gravel. The Felton plant is in the association's "B" classification of plants producing between 200,000 and 500,000 tons of material a year



### At sand and gravel show

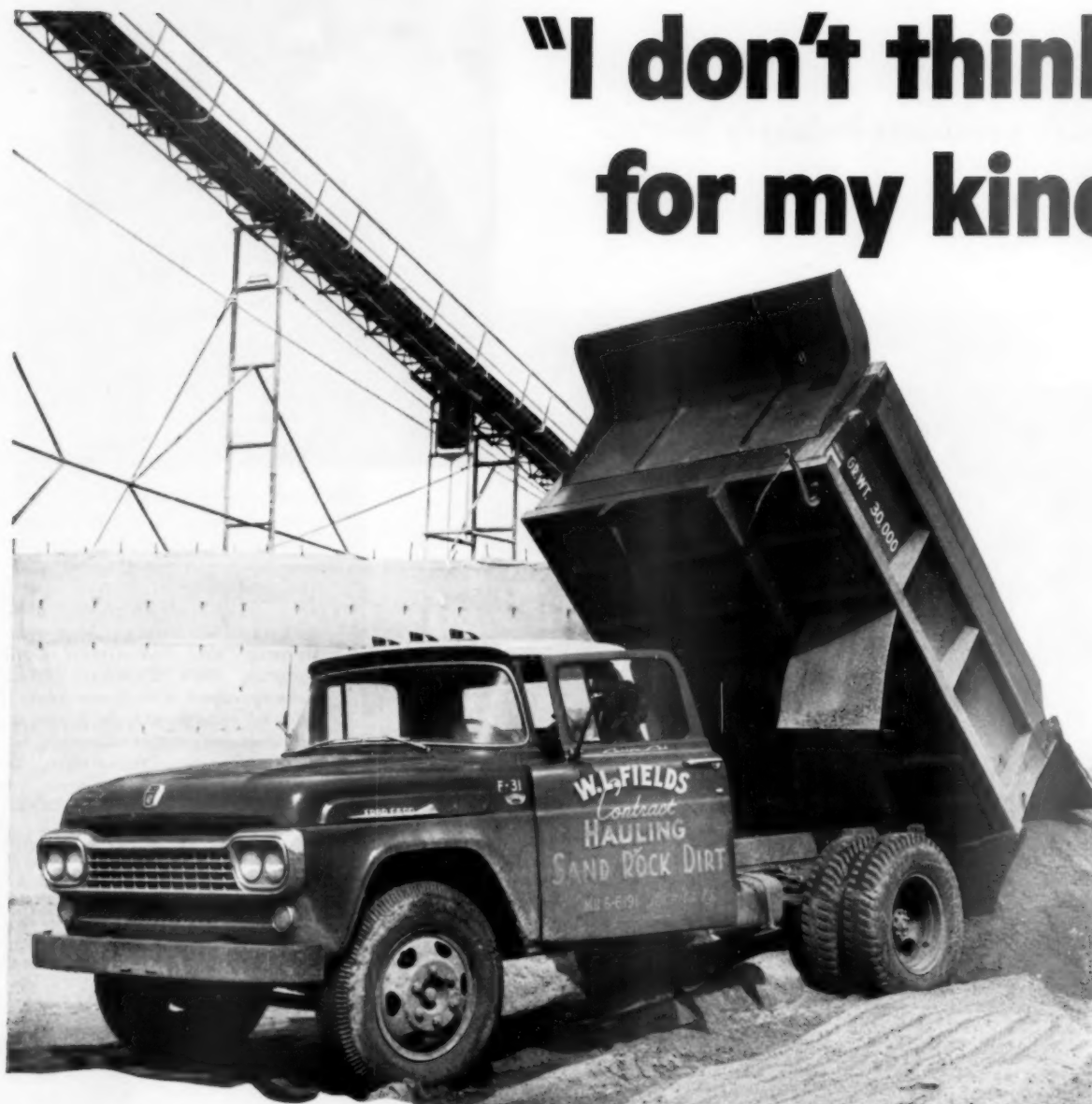
Walter Kosiba, left, spent much of his time at the February convention of the National Sand and Gravel Association looking over latest advances in machinery and equipment. Mr. Kosiba, who is with Morocco Sand and Gravel Co., Morocco, Ind., discusses gravel plant operation with Harry Soderholm of Manitau Beach, Mich., a manufacturer's representative

### All in line of duty

This is Bill Barolet flying the helicopter as part of the service he performs for New York Trap Rock Corp. Other chores are listed under sales and public relations. Mr. Barolet logs some 500 flying hours a year for the company, and notes that much of his air time is spent filling flight requests from schools, private institutions, and municipal and civic groups. He says, "Working with our neighbors is part of the Trap Rock policy."



# "I don't think for my kind



*Official registrations show...*

**AMERICAN  
BUSINESS BUYS  
MORE  
FORD TRUCKS  
THAN ANY  
OTHER MAKE!**



**FORD TANDEM** with 10-yard dump body and new **F-600** with 5-yard dump ... part of Mr. W. L. Fields's Ford Fleet.

# there's a tougher truck of work"

says W. L. Fields

Contract Hauler, Wichita, Kansas

*"And they cost less  
to operate than  
any trucks we've  
ever owned!"*

"Our 13 Fords are mostly two-ton dumps. They haul 6 yards of rock and sand, averaging about 7½ miles per gallon of gas. We get 6 mpg with Ford tandems carrying 14 tons. And they all really hold up. Ford's Heavy Duty V-8's are good for an average of 75,000 miles before an overhaul! We have a '55 Ford with over 150,000 miles on it, and I'll bet there's not another dump truck around here that's in such good shape."

**Whatever your business . . .  
there's a FORD truck for your  
special needs**

Official registrations for 1957 show that *American business buys more Ford trucks than any other make*. There are many reasons

for this popularity . . . many reasons for *you* to make your next truck a Ford!

Ford trucks are your best buy, too! Ford's initial costs are *low* and resale value is traditionally *high*. Modern Ford Styleside pickups, for instance, are the lowest priced with full cab-wide body . . . giving you 23% more loadspace than any traditional type pickup box.

Only Ford offers the economy

of Short Stroke power in all engines, Six or V-8. And Ford's Heavy Duty V-8's offer new, advanced durability features. Ford's rugged cab and chassis construction means these new '58s are built to last. All this plus the proven fact that Ford trucks last longer adds up to America's No. 1 truck value.

See your local Ford Dealer for the latest in '58 trucks or the best in A-1 used trucks.



**FORD'S NEW 292 HD V-8**  
Brake Horsepower—187 @ 3800 rpm  
Bore—3.75 in. Stroke—3.30 in.  
Displacement—292 cu. in.

# FORD TRUCKS COST LESS

**LESS TO OWN . . . LESS TO RUN . . . LAST LONGER, TOO!**

# INDUSTRY NEWS



## Sign contract for plant construction

AMERICAN CEMENT CORP., through its president, D. S. MacBride, announced construction of a 1,500,000-bbl. cement plant at Clarkdale, Ariz. To be built and operated by Riverside-Arizona Cement Co., newly formed division of the corporation, the plant will serve the central and northern Arizona areas.

Contract for engineering, design and construction was awarded to Fisher Contracting Co., Phoenix. Kilns and mills have been ordered from F. L. Smidth and Co., electrical equipment from General Electric Co. and belt conveyors, screens, and materials handling equipment from Hewitt-Robins Co. A 48 x 60-in. Allis-Chalmers jaw crusher will be moved to the site from Riverside Cement Co.'s Oro Grande, Calif., plant.

Pictured during the signing of the construction contract are, seated left to right: Del W. Fisher, president of Fisher Contracting Co. and D. S. MacBride. Standing: Garner A. Beckett, chairman of the board of American Cement Corp., and Warren Hunter, vice president of the Fisher company.

## Combines Dicalite plants

GREAT LAKES CARBON CORP., New York, N.Y., has combined two of its Dicalite diatomite plants in California. The Waleria, Calif., plant has been closed and its equipment has been moved to the plant at Lompoc, Calif. Dwindling reserves at Waleria are responsible for the move.

Waleria equipment is being installed as a separate unit at the Lompoc location. Both will use common

storage, shipping and packing facilities and crude diatomite deposits. The combination will result in a 70-percent increase in the productive capacity of the Lompoc plant. The added facilities are expected to be operating by June.

## \$200,000 fire at Missouri gravel plant

STEWART SAND AND MATERIAL CO., Kansas City, Mo., incurred the loss by fire of the building that housed screening operations at its Independence, Mo., plant. The blaze apparently began near the top of the 100-ft. structure and spread rapidly. Bins in the demolished building contained several hundred tons of rock which had been processed by the vibrating screens overhead. Attempts of firemen to save the conveyor system connecting the crushing and screening buildings were unsuccessful and the system collapsed. Damage was estimated by G. W. Garrett, president, at \$200,000.

## Reopen fluorspar mine

NEWFOUNDLAND FLUORSPAR, LTD., a subsidiary of Aluminum Co. of Canada, resumed mining at St. Lawrence, Nfld., late in February after a layoff of six months. The layoff was required by a reconstruction program in which primary crushers, belt conveyor, loading and hoist equipment were installed and major changes were made at the surface crushing plant.

The plant employs 155 men, and expects to produce 60,000 tons of fluorspar for shipment this year.

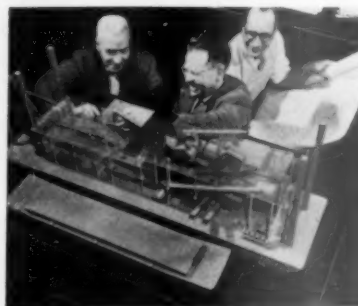
## Break ground for new gypsum plant

UNITED STATES GYPSUM CO., Chicago, Ill., began construction late in March on its new Houston, Texas, plant. A contract for the plant has been awarded to Brown & Root Construction Co. It will be erected on a 30-acre tract between the company's existing plant and the Houston ship channel. The plant will produce gypsum wallboard, rock lath, plaster and gypsum sheathing.

## Consumers' operations under new direction

OTTO A. CHESKA has been appointed general manager of operations of Consumers Company Division of Vulcan Materials Co., according to an announcement by Consumers' president, Harry A. Clark. Mr. Cheska, former vice president of Consumers' Wisconsin operations, succeeds Robert J. Hummel, who resigned April 1.

## Dravo will build another HMS dredge



LOOKING OVER A MODEL of a new sand and gravel dredge to be constructed for Dravo Corp.'s Keystone Division are (left to right) James Cormack, project engineer, Fred Seiler, design engineer and W. L. Price, engineering manager. Complete with its own heavy media plant, impact crusher and scrubber, the \$2-million dredge will be built at Dravo's Neville Island shipyards.

With a digging capacity of 500 tph., the dredge will be equipped to separate four grades of aggregate in its operation on the Ohio River between Pittsburgh and Steubenville, Ohio. Reserves in the area are estimated to be sufficient to supply Keystone Division's sand and gravel requirements for the next 25 years. Dimensions of the new dredge will be: 200 ft. long, 53 ft. wide, 8 ft. 9 in. deep.

## Potash, chemical firms merge

AMERICAN POTASH & CHEMICAL CORP., Los Angeles, Calif., and Lindsay Chemical Co. have announced through their presidents, Peter Colefax

(Continued on page 49)



## SURPASSING TODAY'S NEEDS

the **PLUS** values in...

### REX<sup>®</sup> CEMENT MILL BUCKET ELEVATORS

Here is a completely different concept of cement mill bucket elevators...the Rex Rated Line. These elevators provide the *plus values* you want...the most dependable, economical means of elevating bulk materials. They more than meet the exacting requirements of the cement industry for maximum service life... capacity...dependability. They're your best investment for profitable operations.

**IN CAPACITY**—These elevators match the capacity requirements of modern closed-circuit grinding systems. A hooded bucket and balanced chain design permits much closer spacing of buckets. Vented buckets make sure each bucket carries its full load. With these design features, Rex Centrifugal Discharge Elevators not only closely approach the capacity of super capacity elevators while retaining the advantage of economy...*they are ready for increased capacity demands tomorrow!*

**IN DEPENDABILITY**—The "balanced design" of all components assures longest possible, dependable service life. Chains are selected on dynamic working factors...the static live bearing pressures and fatigue strengths...rather than static ultimate strengths. They're balanced with bucket sizes, speeds and center distances. Chains are designed so they will never break. Down time is never a problem.

**IN ECONOMY**—Rex "balanced design" assures long-life dependability at lowest cost...both first and operating. These elevators pay for themselves. Costly down time and production hold-ups of ordinary elevators are virtually eliminated. And since all sizes are "rated" for capacity and operating requirements, you can easily select the one best suited for your needs.

With a complete line of bucket elevators...the acknowledged leader in elevator design, CHAIN Belt, offers you the *plus values* that make your elevator dollar buy more than ever before possible. For complete information, send for your copy of Bulletin No. 3304. Or, if you're interested in elevator components...chains, buckets, bearings, etc....turn the page.

# CHAIN BELT

4649 W. Greenfield Ave., Milwaukee 1, Wis.

ROCK PRODUCTS, May, 1958

TURN  
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## REX CHABELCO® ELEVATOR CHAINS



Rex X859 Chain with K44 attachment for elevators up to 470 T.P.H.

### DESIGNED FOR DEPENDABLE WEAR LIFE...NEVER BREAK!

These precision-made steel chains are designed to provide the longest possible service life. Only after they have more than earned their keep through long, economical service will they finally wear out. Their extra working strength enables them to handle larger, more fully loaded buckets with ease. Look at what these chains will do for you:

- Lift cement, clinker and stone day after day, year after year, because the large-diameter pins in the extra-wide chains provide unsurpassed "wearability" ...low unit bearing pressures in the chain joint.
- The buckets will never come off...no matter how

big and wide...because the chain attachment is extra large with large-sized bolts. The buckets are always tight no matter what the operating conditions.

- The chains will never come apart because all parts are precision-made and forced together...permanently.
- The chains will never break because they are scientifically designed...extra strength where strength is needed...stress-concentration areas eliminated.
- The wheels will match the chain for "wearability" because they are "deep-hardened" and smooth in operation.



For complete information on elevator chains and components, send for your copy of Bulletin No. 5766.

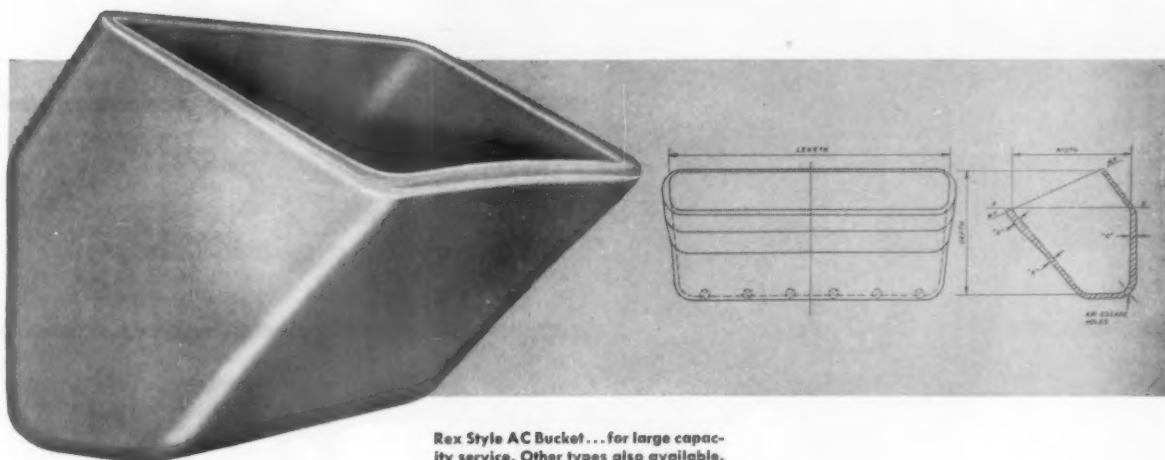
## CHAIN BELT

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CHABELCO CHAINS • ROLLER CHAINS • CAST CHAINS • SPROCKETS • FLEXIBLE COUPLINGS • SET COLLARS

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## REX® STYLE AC ELEVATOR BUCKETS



Rex Style AC Bucket... for large capacity service. Other types also available.

### HOLES IN THIS BUCKET KEEP IT FULL...

Rex Style AC, a new concept in cement mill elevator buckets, assures full capacity at all times and a smooth, fast, clean discharge. Unique air vents in the bottom of the bucket, by allowing displacement of air, prevent trapping or pocketing of air when loading...act as a relief valve to prevent suction when unloading. The results: faster loading...fuller loading...fast, clean discharge, particularly with the fine mesh materials.

On the Style AC bucket, the hooded back makes continuous spacing of the buckets on the chain practical because the entire bucket load is thrown clear

of the bucket line. The high front gives you a bigger bucket load...highest water level capacity for the fine mesh materials.

For smaller capacity bucket elevators, CHAIN Belt also makes a complete line of rugged, long-life buckets in conventional types: Styles A, AA and AARB. All Rex Elevator Buckets are accurately cast in Rex Quality Malleable Iron or in Rex Z-Metal where maximum strength and wear life are required. They have strong, heavy walls...no weak or thin spots. They are straight, clean and smooth for fast discharge. Special steel-fabricated buckets are also available.

SALES OFFICES: Appleton, Wis.; Atlanta, Ga.; Baltimore, Md.; Birmingham, Ala.; Boston, Mass.; Buffalo, N.Y.; Charlotte, N.C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; East Orange, N.J.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Los Angeles, Cal.; Milwaukee, Wis.; Minneapolis, Minn.; Moline, Ill.; Montreal, Can.; New York, N.Y.; Odessa, Tex.; Oklahoma City, Okla.; Philadelphia, Pa.; Pittsburgh, Pa.; Portland, Ore.; St. Louis, Mo.; Salt Lake City, Utah; San Francisco, Cal.; Seattle, Wash.; Springfield, Mass.; Toronto, Can.

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ELEVATOR BUCKETS • TRACTION WHEELS • INTERNAL GRAVITY TAKE-UPS • DRAG CHAINS • BELT IDLERS

ROCK PRODUCTS, May, 1958

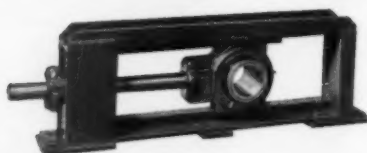
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**SHAFER®**

**ROLLER BEARINGS**



## CONSTANT CAPACITY UNDER ANY LOAD

The unique Shafer Bearing design combines the advantages of the low rolling friction of a ball with the high load-carrying capacity of a roller. And this capacity is constant *regardless of load*...radial, thrust or combined. The combination of concave rollers working between convex raceways distributes the load equally over a maximum contact area. Regardless of load or shaft deflection, there is always more-than-ample contact area...actually reserve capacity to handle heavy shock loads.

Shafer Bearing design provides a high degree of integral self-alignment...3° total between mounting and

shaft...assuring unrestricted compensation for misalignment, shaft deflections, shock loads or installation inaccuracies.

The housing is not bulky or heavy and yet is unusually strong...resists the heavy shock loads of cement mill elevator service. Built-in Micro-Lock provides 12 easy bearing adjustments. "Z" housing seal is a true self-aligning seal...effectively prevents dirt and dust from entering...keeps lubricant in!



For the complete story on Shafer Self-Aligning Roller Bearings...pillow blocks, take-ups, cartridge units, flange units...write for your copy of Catalog No. 55.

# CHAIN BELT

4649 W. Greenfield Ave., Milwaukee 1, Wis.

PILLOW BLOCKS • TAKE-UPS • FLANGE UNITS • DUPLEX UNITS • TAKE-UP AND FRAME UNITS • CARTRIDGE UNITS

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## INDUSTRY NEWS

(Continued from page 44)

and Charles R. Lindsay III, that their boards of directors have agreed to a merger. Lindsay will be operated as the Lindsay Chemical Division of American Potash. Mr. Lindsay will become a director and vice president of American Potash and continue as president of the Lindsay Division. Lindsay Chemical is a producer of thorium, cerium and rare chemicals at its plant at West Chicago, Ill.

### Approve gravel operation

MASSEY ROCK AND SAND CO., Indio, Calif., has secured approval of the Board of Supervisors for establishment of a sand and gravel excavating and crushing plant near Garnet, Calif. Thomas Carter, vice president, said that the plant will be constructed adjacent to the Southern Pacific right-of-way, and that it will abide by the county's air pollution regulations when they are adopted.

### Methods of transporting sand, gravel show change

NATIONAL SAND AND GRAVEL ASSOCIATION, Washington, D.C., has published data taken from reports of the Bureau of Mines which reveal a change in methods of transporting sand and gravel.

Year	Short Tons	Percentage		
		Rail	Truck	Water
1934	67,569,099	57.4	31.7	10.9
1935	75,072,732	56.4	31.3	12.3
1936	104,289,619	51.3	37.0	11.7
1937	108,976,680	47.4	39.3	13.3
1938	91,096,810	41.3	43.0	15.7
1939	106,367,071	39.6	45.2	15.2
1940	117,818,190	38.4	45.8	15.8
1941	165,879,836	41.7	44.9	13.4
1942	218,837,605	42.7	47.4	9.9
1943	159,150,957	48.8	42.4	8.8
1944	137,469,709	50.1	42.4	7.5
1945	141,285,645	49.2	43.5	7.3
1946	179,589,550	39.9	51.1	9.0
1947	202,325,533	37.5	53.1	9.4
1948	223,195,000	35.4	56.2	8.4
1949	221,015,000	31.7	59.6	8.7
1950	245,999,000	29.5	61.3	9.2
1951	270,671,000	29.5	61.8	8.7
1952	296,589,000	28.1	63.2	8.7
1953	291,761,000	25.6	65.0	9.4
1954	373,170,000	20.9	72.3	6.8
1955	393,505,000	21.6	72.4	6.0
1956	451,836,000	18.55	75.55	6.0

### Pavement yardage

AWARDS OF CONCRETE PAVEMENT for the month of February and the first two months of 1958 have been classified by the Portland Cement Association as follows:

	Sq. yd. awarded during	
	February	First 2 months
Roads	2,640,199	6,612,124
Streets and alleys	1,704,890	3,024,977
Airports	208,694	404,556
Totals	4,553,783	10,041,657

(Continued on page 52)



**NOW, A MANGANESE STEEL ELECTRODE**  
with High Build-up, Low-spatter, Easy Slag Removal

**A special new Amsco rod, Nicro-Mang, for both joining and buildup of manganese steel**

Out of Amsco® metallurgical research has come a new welding rod that gives you high weld strength without cracking on Austenitic manganese steel. A rod that lets you lay down a bead without slag popping, and slag removal is easy.

To lick the cracking problem, it took a special alloy of chromium and nickel, plus a unique coating for Nicro-Mang.

Write for Nicro-Mang bulletin, or see your local Amsco distributor.

Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.



**AMSCO**

American Manganese Steel Division

Chicago Heights, Illinois  
Enter 1038 on Reader Card

ROCK PRODUCTS, May, 1958



# 6 YARDS

**A ten or twelve yard tandem-axle truck loaded in 60 seconds!**

**Two 23-ton semis heaped in three or four minutes!**

**Two passes for the smaller truck, five for the two bigger ones combined.**

Someone's dream? Not any more! It's been standard practice at Stony Creek Stone Company's pit near Indianapolis ever since last summer. That's when their big 6 yard Model 375A Michigan Tractor Shovel went to work.

**Big production cuts costs, reduces truck waiting time**

Stony Creek's problem up until then had been a common one: "How to hold down loading costs, and reduce truck waiting time in the face of rapidly-expanding customer demands." Fast rubber-tired Tractor Shovels had long since replaced cranes and crawler-loaders. The biggest rubber-tired units available, 2¾ yds, were in use. But, production requirements were calling for still more loading capacity. At that point, Company General Manager Dick Irving got a big idea. Visiting the Clark booth at the Road Show, he saw the new 6 yard Model 375A Michigan. "There," he thought, "is a Tractor Shovel that could *really* do a job for us. It could give us enough ca-

capacity to replace two smaller Tractor Shovels *plus* handle all the expansion we anticipate for years to come."

**Michigan output totals 2,500 tons daily**

Today, the big Michigan and its *one* operator do the work of two or more smaller Tractor Shovels. Michigan output averages 2,500 to 3,000 tons of crushed limestone every day. "Despite its size, I'd rather run this big Tractor Shovel than any other," says Operator Carroll White. "It handles easily. It moves and responds just as fast as any smaller loader. Its big low-pressure tires really absorb the bumps. And its smooth ride sure cuts down on the fatigue you'd expect from a 10-hour day—even though I alone load as much stone as two men



Notice how much this big new Michigan looks like the smaller Michigans you see everywhere. It handles as easily as they do, too—with power steer, power-shift, torque converter, planetary wheel drive-axles standard. Its entire all-Clark power train is the same design as that job-proved in the 8,000 Michigans now in the field.

Specifications	Model 375A	Model 275A
Bucket capacity (standard SAE ratings)	6 yards	4 yards
Lifting capacity	30,000 lbs.	22,000 lbs.
Weight	61,000 lbs.	45,000 lbs.
Speeds (forward and reverse)	0-25 mph	0-28 mph

# PER PASS

did when the pair of 2½ yard rubber-tired Tractor Shovels were working."

## Five passes heap two semis

And that's another reason White prefers the 375A. Higher production! With the smaller machine, White needed at least four minutes and eight passes to load one 23-ton haul truck. With the Model 375A, White regularly loads *two* 23-ton semis in the same time or less—in only 2½ passes each. Two-and-a-half passes? Yes, White does it like this: Two heaped loads go into the truck. On the third load, precise hydraulic controls let White hold bucket so that only half its load is dumped. That fills one truck. The other half-load is fed into the second truck. Then, two more full loads send this truck on its way too. Thus: five passes, two truck-loads.

## Efficiently loads small trucks, too

White even prefers to load a *five-yard truck* with the 6-yard Michigan. Here, the Tractor Shovel bucket is allowed to extend beyond the back end of the truck when dumping. May *sound* wasteful, but before the loaded truck can shift into second, one quick swipe of the Model 375A bucket has cleaned all spillage.

## Model 375A easy to maintain

White feels the big Model 375A is as easy to run as *any* Michigan Tractor Shovel—perhaps even a little easier because of its greater weight and better stability. The new Tractor Shovel is easy to take care of, too. In only 10 minutes each morning, White makes his daily maintenance check. Proper care, plus

rugged construction, have held repairs to virtually nothing. In the many months Stony Creek has had the Model 375A, there has been *no maintenance at all* on the job-proved Clark power train.

Clark distributors are ready to *show you* this big new dependable 6 yard Michigan, as well as the new almost-as-big 4 yard Model 275A. Call to arrange a date.

Michigan is a registered trade-mark of

## CLARK EQUIPMENT COMPANY

Construction Machinery Division

2481 Pipestone Road

Benton Harbor 10, Michigan

In Canada: Canadian Clark, Ltd., St. Thomas, Ontario

**CLARK®  
EQUIPMENT**

# Dust Collection Performance is what you buy from **Norblo**



**We haven't introduced a "new model" for many years!**

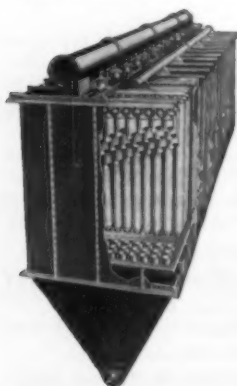
Yet Norblo Dust and Fume Collectors are completely modern—up to date. We keep them that way. And we've found it isn't the *model* that interests users . . . it's the *performance* of the equipment we recommend.

Outwardly, Norblo Equipment of several types *appears* to be just about the same as it was a quarter century ago. (There isn't a need to "stylize" these facilities.) But Norblo engineering—mechanical elements—materials and special components—all undergo constant scrutiny and testing. When improvement possibilities are discovered they are adopted at once—no waiting for next year's model!

Norblo engineers study to improve efficiency, add to equipment life, and reduce maintenance trouble and expense. Our repair parts business is terrible! (Low, that is!)

For 45 years Norblo Equipment has supplied outstanding dust arresting and recovery service for the cement and rock products industry. Norblo's "Cement Cooling in Production" process (Patented) achieves remarkable results in hundreds of American and foreign mills.

We are proud of our association with, and our opportunity to serve this important and far-reaching industry.



**The Northern Blower Co.**  
6408 Barberton Ave. • Cleveland 2, Ohio  
Telephone OLYmpic 1-1300

Known wherever cement is made, Norblo Automatic Bag Type Dust Collection plus Norblo Cement Air Cooling System (Pat. No. 2,350,737) combines two separate functions necessary for modern cement manufacture in one installation of maximum efficiency. Write for Bulletin 165.

# Norblo

ENGINEERED DUST COLLECTION SYSTEMS  
FOR ALL INDUSTRIES

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## INDUSTRY NEWS

(Continued from page 49)

### Diatomaceous earth plant in construction stage

THE EAGLE-PICHER CO., Joplin, Mo., has begun construction of a diatomaceous earth plant at Lovelock, Nev. Designed and being built by Kaiser Engineers, the \$2-million plant is scheduled for completion next August.

The project includes an L-shaped, 80-ft. high steel structure, 63-ft. long on one side and 51 ft. on the other. It will support the drying and classifying equipment. Machinery to be installed includes a 9 x 120-ft. rotary kiln, blowers, cyclones, traps and air heater.

An open pit mine located 25 miles from the plant site will supply material for processing. At capacity, the plant will produce 36,000 tons of natural and calcined filter aids annually.

### Plant construction underway

IDEAL CEMENT CO., Denver, Colo., announced that first stages of construction of its new \$12-million plant at Tijeras, N.M., got underway in mid-March. Cement storage silos will be the first phase of the project. The plant, having a capacity of 1,000,000 bbl., will raise to 16 the number of plants operated by Ideal.

### Canadian cement shipments up 21 percent in 1957

CANADIAN CEMENT manufacturers shipped 6,000,000 tons in 1957, 21 percent more than in 1956. Of this amount, 5.5 percent was exported, compared to 2.5 percent the previous year.

### Aetna fetes employees

AETNA PORTLAND CEMENT CO., Essexville, Mich., honored its employees for their accident-free record in 1957 at a dinner recently. The company won a Portland Cement Association safety trophy for the third time, having previously won it in 1948 and 1950. For their record of putting in 470 days without a lost-time injury—523,884 man hours—the company provided each of the 250 employees with a pair of safety shoes.

Also honored at the dinner for long time service were Frank B. Paul, 30 years; Russell A. Davis, 28 years and Aleck Hiscox and Andrew Phetteplace, both 25 years. Each received a gold watch.

(Continued on page 54)





Four Michigan Tractor Dozer models are now available . . . this 165 hp size, 262 hp, 335 hp, 600 hp.

## Rock quarry cuts repair bills 60%

*Company records show rubber-tire Michigan Dozer also has reduced cleanup time 50% over track-type machines*

"Like many other stone quarries, we sure used to be unhappy about track maintenance," says G. E. McLeer, vice president, Ohio River Stone Co, Prospect, Kentucky. "Rails alone used to cost us hundreds of dollars per year for replacement . . . plus several man-days of labor per change. No more. Our rubber-mounted Model 180 Michigan Tractor Dozer has run a year now. Naturally, no track problems . . . and no tire replacement either. Looks like original treads will last another year easily. Then, we expect to recap . . . and repeat recap. The savings should be at least 60%."

### Excellent performance of Michigan Tractor Shovel echoed in Dozer

"Track wear wasn't the only reason we changed over," McLeer continues. "We chose the Michigan Dozer because of our excellent experience with our three Model 175A Michigan Tractor Shovels. Their all-Clark power trains really stand up. The Dozer's power train does, too. In its year of operation, the dozer has lost maybe 25 working hours—but that's all!

### ¾ mile move takes 2 minutes

"Production was another of our aims. The Michigan gets around much faster than the crawlers. In emergencies, for instance, we drive it the 20 miles be-

tween our two main quarries under its own power. After all, it's got a top speed of 27 mph, with good visibility, good brakes and power steering.

"Moves in any one quarry aren't nearly as long, but they're virtually continuous. Typical ¼-mile trip takes only 2 minutes . . . half to a third of crawler time. And, of course, the saved minutes go into productive work so necessary with increasing production demands.

"Our time studies show the rubber-tired Dozer moves more material on almost all jobs too—50 per cent more when dressing stockpiles than a track-type machine. The reason? The Michigan moves just as much with its 10-foot dozer blade per load, yet moves more loads per hour. Speed advantage is mostly in faster backup, faster shifting. You don't have to stop to change speeds; just move a short-throw lever. No foot-clutching is necessary, ever."

### Jack-of-all-jobs

Michigan Model 180 Tractor Dozer is "work-horse" of the main Derby Company quarry. Unit:

1. Takes about ½ hour to clean quarry floor after each shot.
2. Three to four times a day cleans up around two shovels: one on rock, one on stripping. Total work time, about 1½ hours per day.

3. Once a day, cleans spillage from 2 miles of truck roads.

4. Cleans spillage under crushers and aggregate bins.

5. Shapes nine rock stockpiles.

6. Cleans rock and dirt after stripping and before drilling.

### Distributor service praised

"If any of our Michigans go down, we call our distributor (Emmett C. Watson Co of Louisville), and his men come right out," says McLeer. "Very seldom do we have to wait for parts and we get good warranty service."

You can get the same fast, low-cost help from your Michigan Distributor. Their good service is an important reason for the sale of over 8,000 Michigan rubber-tire units since 1954. Call them soon . . . they're good friends to know.

### CLARK EQUIPMENT COMPANY

Construction Machinery Division  
2481 Pipestone Road,  
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Michigan is a registered trade-mark of

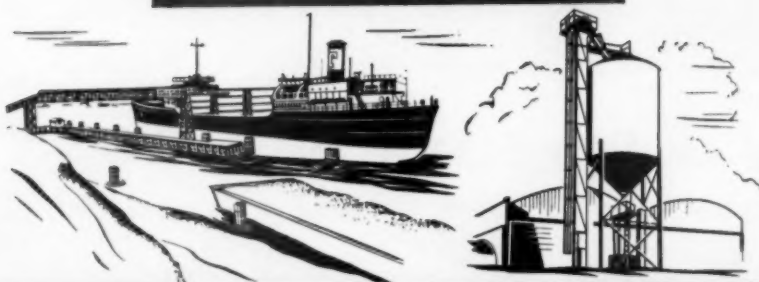
**CLARK®**  
**EQUIPMENT**



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# Conveyors



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**Dependable**  
**Rugged**

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54

ROCK PRODUCTS, May, 1958

## INDUSTRY NEWS

(Continued from page 52)



### Stone crushing firm purchases towing company

NEW YORK TRAP ROCK CORP., West Nyack, N.Y., has acquired the Cornell Steamboat Co., including its capital stock and towing franchises. The 80-ft. 600-hp. tug, Rocktow, pictured above, was included in the transaction.

According to Wilson P. Foss, III, president of New York Trap Rock, the tug operation will permit the company to take full advantage of more modern towing methods to speed stone deliveries to its customers. The flotilla type operation with 18 or 20 barges going to market at the same time will be abandoned. Instead, smaller tows will be dispatched twice a day with six or eight barges.

Mr. Foss estimated that travel time to the market area in New York City will be sliced in half, with overall saving of 25 percent attained in deliveries to points in Long Island, Connecticut, New Jersey and elsewhere.

### Revise estimates of highway project materials

NATIONAL CRUSHED STONE ASSOCIATION, Washington, D.C., in Letter No. 54 to its member companies, revised earlier estimates of aggregates needed in the years 1958 and 1959 in the Federal-Aid Highway Program. Figures were provided for each of the four systems, Interstate, Primary, Urban and Secondary, each listing separately aggregates to be produced by the contractor or purchased by him. Estimates for the Interstate System were based on the assumption that 50 percent of funds apportioned will be spent on rural type construction and 50 percent on urban type. Grand totals for the four systems were listed as follows:

#### Estimates of Aggregates Needed, by States

(In thousands of tons)

	1958	1959
Ala.	2,991	3,360
Ariz.	2,549	3,803
Ark.	7,957	8,525

(Continued on page 56)

Enter 1042 on Reader Card

# "We bought 1 Tournatractor<sup>®</sup> to replace 2 crawlers"

says pit manager James W. MacDonald

At their Lynchburg Stone Division Pit in Concord, Va., Rockydale Quarries Corporation produces up to 2,000 tons of crushed limestone daily. To meet production requirements, 2 crawler-tractors were used on scattered maintenance assignments around the pit and plant. Since distances between the multiple-tractor jobs ranged up to  $\frac{1}{2}$  mi., the slow-moving crawlers lost valuable work-time when traveling job-to-job. What's more, track maintenance ran high because of travel distances over the abrasive footing.

So Rockydale Quarries looked for a more economical type of tractor. They found it in the rubber-tired LeTourneau-Westinghouse Tournatractor. Says pit manager James W. MacDonald, "We bought 1 Tournatractor to replace 2 crawlers, and also to cut track repair costs. It's very successful... we like its speed and versatility."

## All-around handyman tool

Lynchburg Stone Division Pit uses their Tournatractor—equipped with 14'10" long Angledozer<sup>®</sup> blade—as an all-around handyman tool (note sketch). This speedy, rubber-tired tractor cleans-up after blasts and around shovels. It handles general dozing, moves wagon-drills on pit rim, assists stalled trucks, and maintains stockpile. When shovel at plant is down for repairs, Tournatractor takes over... pushes rocks from surge pile to hopper, to insure uninterrupted plant produc-



Tournatractor quickly clears blasted rocks from watery pit floor. Operator Rodney Arthur says, "Tournatractor is easy to operate. It's powerful, runs good and is fast. With a crawler it used to take me 16 min. to go from pit to plant... but with Tournatractor it takes only 2 or 3 min."

tion. Rubber-tired tractor also is used to push-load pit's Handyman D Tournapull<sup>®</sup> scraper on stripping and road-building operations.

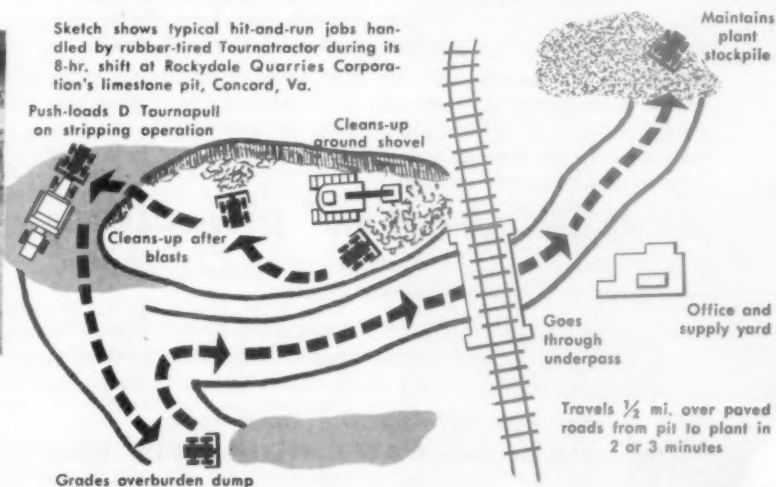
Commented pit foreman Jabe S. Ferguson Jr., "We're all strung out between quarry, plant, and stripping-ends on quarry rim. The Tournatractor hustles back and forth... works all over the place. It does a good job."

## Try Tournatractor at your pit

If your pit operation is widely scattered or involves abrasive material, why not investigate rubber-tired LeTourneau-Westinghouse 210 hp Tournatractor? You'll find this speedy tractor completes scattered jobs faster, at lower cost. Let us arrange to demonstrate versatile Tournatractor at your pit. No obligation.



Between dozing assignments, 210 hp Tournatractor push-loads 7 $\frac{1}{2}$ -yd. D Tournapull (new "D" has 9-yd capacity) with red and blue clay overburden. Pit also owns a L-W Rear-Dump hauler which is easily interchanged with scraper... increases "D" prime-mover's usefulness.



CT-1707-QMJ-1



**LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit





## SLY DYNACLONE

### Collects ALL the Crusher Dust

At Lone Star Cement Corporation, Bonner Springs (Kansas) plant, this Sly Dynaclone operates continuously to collect dust from all units in the crusher building. The salvaged material is automatically moved by screw conveyor from Dynaclone to storage. By keeping the building dust-free, the Dynaclone contributes to greater worker efficiency and reduced overall maintenance costs.

Three other Dynaclones at this plant also play a star role in cement saving. They reclaim cement dust from three silo groups and from the distribution systems that supply them.

Lone Star has nearly 200 Sly Dust Filter installations at its plants throughout the country. The reason: Sly Filters are designed to do a better job — with no appreciable maintenance — on all cement mill applications. Find out how they can do a better job for you . . .

### NEW! "ROLL-CLEAN" DYNACLONE

Now, all the advantages of the original self-cleaning, continuously operating dust filter — *plus*:

- Easier filter bag changing • Greater cloth area • Complete dust seal — automatic seal adjustment • Free-rolling cleaner — no sliding • Fewer operating parts • Easy access to all parts.

Get complete details. Send for

**NEW 36-PAGE BULLETIN 104**



**THE W. W. SLY MANUFACTURING CO.**

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OFFICES IN PRINCIPAL CITIES

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## INDUSTRY NEWS

(Continued from page 54)

### Estimates of Aggregates Needed (In thousands of tons)

	1958	1959
Calif.	12,931	14,815
Colo.	3,545	3,817
Conn.	2,563	2,835
Del.	1,659	1,861
Fla.	3,581	3,955
Ga.	4,603	5,184
Idaho	5,419	6,040
Ill.	8,353	9,005
Ind.	8,008	9,044
Iowa	5,841	6,258
Kans.	5,392	5,754
Ky.	8,033	8,997
La.	3,815	4,125
Maine	4,502	4,821
Md.	2,099	2,287
Mass.	3,442	3,880
Mich.	8,999	9,751
Minn.	18,094	20,144
Miss.	3,483	3,784
Mo.	5,338	5,770
Mont.	12,110	12,154
Neb.	9,411	10,516
Nev.	4,216	4,604
N.H.	2,446	2,680
N.J.	2,489	2,747
N.M.	4,901	5,319
N.Y.	8,579	9,534
N.C.	11,252	12,402
N.D.	9,807	10,858
Ohio	7,361	9,299
Okla.	4,950	5,146
Ore.	3,920	4,639
Pa.	6,404	6,853
R.I.	3,319	3,128
S.C.	2,828	3,156
S.D.	13,519	15,475
Tenn.	8,371	9,084
Texas	17,570	18,186
Utah	3,919	4,791
Vt.	2,127	2,388
Va.	4,226	4,537
Wash.	6,179	6,940
W. Va.	1,288	1,374
Wis.	5,882	6,022
Wyo.	4,423	4,933
Hawaii	456	473
D.C.	485	530
P.R.	305	318

### New sales office

LEHIGH PORTLAND CEMENT CO., Allentown, Pa., has opened a district sales office in the No. 1 Miami Building, Dupont Plaza Center, Miami, Fla.

William A. Mercer, formerly of the Minneapolis sales office, has been appointed district sales manager for the Miami district and R. J. Siegfried, of the Birmingham office, has been appointed assistant district sales manager.

(Continued on page 58)





LeTourneau-Westinghouse Rear-Dump casts 11 tons of steaming slag over edge of waste dump. Unit travels 10 mph faster than smaller competitive hauler working at same location.

heavy-duty unit is proving about 10 mph faster than the rival dumper.

#### Scraper hauls ore, digs ponds

"D" scraper teams with a tractor-drawn scraper to move 1800 tons of raw ore a day, in two 8-hour shifts. Fast, maneuverable Tournapull also handles many other scattered dirt-moving jobs. Last year it did about 90% of the excavation work for two settling ponds — each 1,000' x 35' x 20'. A third pond of this size is on the immediate work schedule for this machine.

#### Trailing units interchangeable

The company keeps both its Tournapulls working almost full time, and therefore has individual prime-movers for each. The Rear-Dump and scraper, however, are interchangeable behind the same standard Tournapull prime-mover... and can be switched in a few hours for two-way versatility.

Call or write for specifications on Tournapull Rear-Dumps, scrapers, and other rubber-tired LeTourneau-Westinghouse units that can speed production and cut costs at your pit.

## How big chemical firm hauls phosphate ore, hot slag, with Rear-Dump and Scraper

**I**n Central Idaho, a large phosphate producer mines phosphate ore and processes it into liquid phosphorus. Two of the most important haul units in the firm's operation are powered by LeTourneau-Westinghouse 138 hp Model D Tournapulls®.

One "D" prime-mover is hooked up to the standard 9-yd. Tournapull scraper. It is used to load ore from stockpiles, and haul it to grizzlies feeding the plant's conveyor line. The other prime-mover powers a

LeTourneau-Westinghouse 11-ton Rear-Dump. This unit hauls slag from the plant pit to a waste dump.

**2 tons more per load  
... 10 mph faster**

The L-W Rear-Dump, together with another dump unit, haul approximately 30,000 tons of hot slag a month. Carrying an average of 11 tons... compared to 9 for the competitive unit... the "D" hauls 835', dumps and returns, in an average of 4.25 minutes. On the haul, this



Wide, unobstructed bowl of Rear-Dump provides easy target for shovel. Hauler maneuvers easily, spots fast at shovel and fill. It turns full 90°, can make complete U-turn in less space than its own length.



"D" scraper loads ore, hauls it to grizzlies... handles other jobs, like digging ponds. Scraper and Rear-Dump units are interchangeable behind any "D" prime-mover.

DRDP-1564-MQJ-1

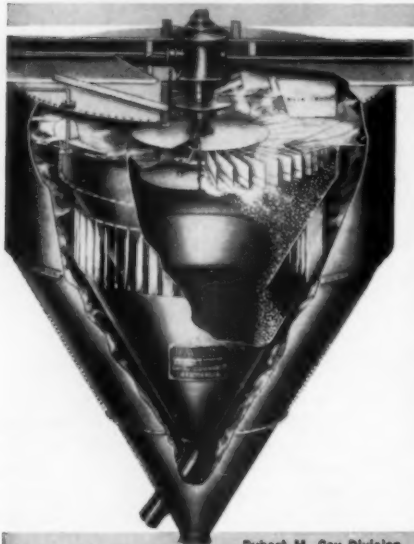


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Classify practically all  
dry fine materials

You get:

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- NO UNDESIRABLE  
OVERSIZE.

RANGE 60 to 400 mesh.

Timken bearings.

Choice of Standard or

Heavy-Duty Models.



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on  
request

## "WORLD'S MOST RESPECTED MOTOR"

And no wonder . . .

because Brook A. C. Motors have  
gone quietly about their business,  
dependably delivering power to  
industries around the world  
for over half a century.



A look at the service charts and  
maintenance records of hundreds of users  
shows why the Brook has become the  
"World's Most Respected Motor". All standard  
types . . . 1 to 600 HP . . . warehouse stocks, ready for shipment, and  
Factory Representation in major industrial centers. Send for  
brochure and name of your local Brook Dealer.

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**BROOK MOTOR CORPORATION**

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## INDUSTRY NEWS

(Continued from page 56)

### National Lime Association



#### Certificate of Achievement in Safety

The Thousand Day Club Of The Lime Industry

This Certificate is awarded to the

#### Ste. Genevieve Vertical Plant of Mississippi Lime Company

For having operated safely without a lost-time injury to any employee  
during a period of one thousand days or more from November 27, 1954  
In commemoration of the achievement, the National Lime Association,  
cooperating with the United States Bureau of Mines, has awarded this  
Certificate of special honor.



General Manager  
December 15, 1957  
Washington, D. C.

### Makes Thousand Day club

THE STE. GENEVIEVE VERTICAL KILN  
LIME PLANT of Mississippi Lime Co.,  
Ste. Genevieve, Mo., has become the  
seventeenth member of the Thousand  
Day Safety Club for the lime industry.  
The plant has been operating without  
a lost-time accident since November 27,  
1954. For its record the plant was  
awarded a Certificate of Achievement  
in Safety by the National Lime Asso-  
ciation, sponsor of the safety compe-  
tition conducted in cooperation with  
the U. S. Bureau of Mines.

Mississippi Lime Co. operates five  
lime plants in the Ste. Genevieve area.

### Study gas flow in precipitator models

IMPROVING THE FLOW of industrial  
gases through electrostatic precipita-  
tors for removal of processing dust,  
cement, chemicals and fly ash can  
double their capacities, according to  
Dr. Harry J. White, director of re-  
search and development, Research-  
Cottrell, Inc., Bound Brook, N.J.

Speaking before a group of editors  
representing industrial publications,  
Dr. White said that studies of gas  
flow in ten plastic models have shown  
that elimination of unbalanced gas  
flow, turbulence, eddies and vortexes  
in the flues leading to the precipitators  
can increase efficiency from 85 to 98  
percent. Editors were shown six of the  
ten research models used by Research-  
Cottrell. Among the models shown  
were those constructed for Common-  
wealth Edison's Fisk Station in Chi-  
cago, Consolidated Edison's Staten  
Island Station and U. S. Steel's Du-  
quesne plant.

(Continued on page 60)



## Use same L-W prime-mover in stripping and hauling

**You save on original equipment investment . . . and reduce operating costs**

Stripping overburden is different from mining out pay ore or rock. It is basically a *scraper* job—can be handled most economically by modern scrapers. They leave your shovels and haulers free to maintain steady production.

Yet, since stripping is not a continuous operation in most pits, you need a multi-purpose machine—one that can quickly switch over to hauling shovel-loaded material when you catch up on stripping of overburden.

You get this advantage with the LeTourneau-Westinghouse Tournapull® line. These L-W machines keep equipment investment and operating costs low *all year long* because of their interchangeability feature (see panel). The prime-mover—major part of your original machine investment—interchanges with a variety of prof-

it-making work trailers for other specialized duties. They handle your stripping, land-leveling, roadbuilding, pit-hauling, and waste product disposal efficiently, and at low cost.

### Cut costs on your operation

The next time you consider investing in new stripping or hauling machinery, investigate Tournapull. Ask about the multiple work bonus you get (at fractional cost) from its interchangeable L-W trail units. Ask for specifications and prices on all 3 sizes. All have road speeds of close to 30 mph, ability to turn 180° non-stop in less than their own length.

**L-W Tournapull Scrapers  
in 3 Sizes**

Size	Diesel HP	Maximum MPH	Bowl Capacity Yards	Capacity Tons
B	335*	30.0	27	32.5
C	210	29.9	18	20.0
D	138	29.5	9	10.0

\* when torque converter is specified

### Interchangeable Rear-Dump

Tournapull scrapers interchange with other L-W trailing units behind the same prime-mover. For pit work, the Rear-Dump offers economical hauling ability, and simple operation—plus all the advantages of Tournapull speed and mobility. Bowl capacities are 35, 22, and 11 tons. Other L-W trailing units, suitable for pit and quarry work, include bottom-dump and side-dump haulers.



P-1860-MQ-1

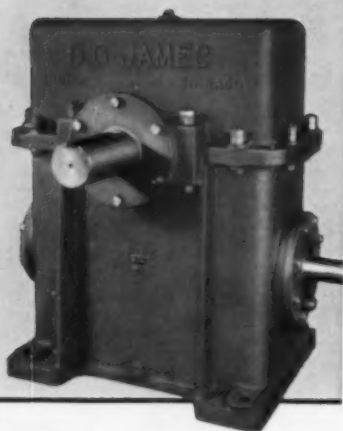


**LETourneau-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS**

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## D.O. JAMES WORM GEAR SPEED REDUCERS

THE D.O. James Worm Gear Speed Reducers cover a wide range of ratios and horsepower... and feature the advantages of right angle shaft arrangement, minimum of moving parts, accurate meshing of precision produced worm gearing, anti-friction bearing mountings and tested lubrication. The proven efficiency, long life and compactness of this type of gear reduction makes them the "MUST Reducer" for many power saving installations.

They are designed and built by an organization that has been making Gears and Gear Reducers for Seventy Years. May we serve you?

### Extensive Worm Gear Making Facilities



D. O. James Worm Gear teeth are generated on tangential feed hobbing machines by tapered and ground hobs. We make worm gears from 1" to 80" in diameter and from 24 DP to 1 DP.

**D.O. JAMES**  
GEAR MANUFACTURING CO.

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MAKERS OF EVERY TYPE OF GEAR  
AND GEAR SPEED REDUCER

#### SEND FOR CATALOGS

Catalogs and price lists covering worm gear speed reducers (the right angle drive) are available to power transmission engineers. Please request on Company Letterhead — we'll mail your copy at once.

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## INDUSTRY NEWS

(Continued from page 58)

### Industry-wide survey of crushed stone business

PROSPECTS FOR THE crushed stone business in 1958 appear good to producers throughout the country, according to a survey released by National Crushed Stone Association. Production and demand information developed by regional vice presidents indicates that the majority of members anticipate good prospects. The consensus is that not much change in demand is in store for 1958. On the average, prices were up five percent in 1957, and volume of demand in relation to capacity was rated 80 percent.

With respect to volume of business in 1956 and 1957, the nine areas responded differently. Increases from 6 to 12 percent were reported by Southwestern, Central and New England areas; Southeastern and British Commonwealth regions saw no change; and decreases from 6 to 20 percent were reported by Midwestern, Northern, Eastern and Western regions. Most areas reported an increase in their aggregate capacity last year.

The uses to which crushed stone was put in the various territories last year was the subject of another query. In summary, producers allocated it in the following proportions: highway construction, 60 percent; railroad ballast, 6 percent; building construction, 17 percent; chemical and metallurgical uses, 6 percent; agricultural limestone, 3 percent; riprap, 1 percent; other uses, 7 percent.

### Public relations brochure put out by Campbell's

HARRY T. CAMPBELL SONS' CORP., Towson, Md., has publicized its operations in an attractive three-color booklet, "This is Campbell—quarrymen, contractors, manufacturers." Traced are the company's three generations of growth in establishment of quarries and plants in Maryland, Connecticut, New Jersey, New York, Pennsylvania and Virginia.

The company's products—crushed stone, ready-mixed concrete, sand and gravel, Sakrete, plaster mix, calcium carbonates, ground limestone farm products, dolomitic bank sand, white sand, riprap stone, feldspar and others—are itemized. Activities in research, manufacturing, service and distribution, which contribute to Campbell "know-how," are described in the illustrated brochure.

(Continued on page 62)



## CANCER LIFE-LINE

In factories, plants and offices across the nation, the line is busy. Through films, pamphlets, posters, exhibits and lectures, the life-line of cancer education is reaching more and more men and women in business and industry.

All of us are concerned with the major threat which cancer poses. Today, thousands of lives are being saved each year, but many more would be saved if people went to their doctors *in time*. This, and many other facts of life about cancer, are part of the education program which the American Cancer Society offers you in your plant or factory. For additional information, call the American Cancer Society office nearest you, or write to "Cancer" in care of your local Post Office.



AMERICAN CANCER SOCIETY





16  
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FULL  
OF  
CHAIN  
DATA  
IS...

*Yours for the asking*

TISCO Manganese Steel Chain has no rival for long wear and rough use. All popular sizes and types of chain are shown for handling of materials such as ores, sand, gravel, pulp wood, etc. Write today for this complete FREE Catalog.

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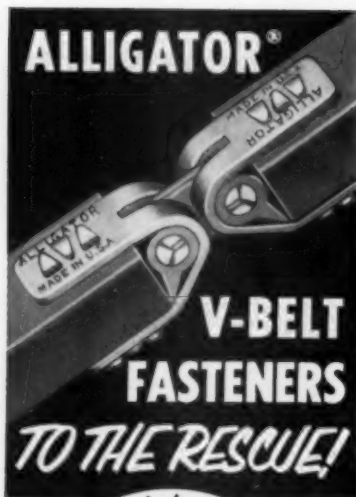
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ROCK PRODUCTS, May, 1958

61



**ALLIGATOR V-BELT FASTENERS TO THE RESCUE!**

**OPEN-END V-BELT HURRY!**

Alligator V-Belt Fasteners simplify the replacement of worn or damaged V-belt with correct size, stretch resistant OPEN-END V-BELTS—Keep costly "downtime" at a minimum... no dismantling of machinery.

Be sure your maintenance department has a complete stock of Alligator V-Belt Fasteners and roll of V-Belting on hand.

**FOUR TYPES...**

- Regular V-Belt Fasteners for B, C, D, E, & BB V-Belting
- Aluminum
- Monel
- Permanently Assembled.

**ORDER FROM YOUR DISTRIBUTOR OR WRITE TO...**

**Flexible STEEL LACING COMPANY**

4684 LEXINGTON ST. • CHICAGO 44, ILL.  
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## INDUSTRY NEWS

(Continued from page 60)



### King size cores

THE AREA NEAR WEeping WATER, Neb., yielded these 24 in. diam. king size cores, during recent test drilling for a quarry site by the Layne Western Co., Omaha. The cores were taken with a Failing 1500 Holemaster rotary rig using a 26-in. calix core barrel and steel shot. The cores are crystalline limestone and were taken at depths ranging from 40 to 62 ft.

The rig used for the drilling tests is a truck-mounted rotary designed to handle drill pipe and casing loads up to 25,000 lb. It is conservatively rated to drill to depths of 1,500 ft.

### Sand screening, settling booklets are available

TWO BOOKLETS on sand preparation that were originally published as a service to ROCK PRODUCTS readers are still available and may be had by writing this magazine. Nathan C. Rockwood's *Screening Fine Materials*, copyrighted in 1946, is an authoritative discussion of determining factors in the operating efficiency of vibrating screens.

Another volume, *Fundamental Principles of Sand Settling* (copyright 1929 and 1943) was written by the late Edmund Shaw as a practical guide to commercial sand producers. A limited number of these standard references still on hand will be given to individuals requesting them.

### Loan develops Indian cement

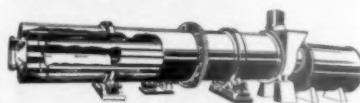
THE GOVERNMENT OF INDIA has secured a \$225 million loan from the United States for development of transportation and cement plants. Of the total, \$75 million will be taken from the Development Loan Fund, making first use of the fund that was created last year. The remaining \$150 million will be an Export-Import Bank loan.

(Continued on page 64)

## Most Complete

### LINE OF ROTARY DRYERS, KILNS HEATERS & COOLERS

Ruggles-Coles equipment is available in a variety of types and sizes.



Semi-Direct Heat, Double-Shell Dryer, ideal for coal drying.



Indirect-Heat, Double-Shell Dryer for easily-contaminated materials such as kaolin, chalk, etc.



Rotary Steam Tube Dryer designed for raw chemicals.



Single-Shell Dryers, parallel or counter-flow, for most organic materials.



Hot-Air Dryer for inorganic salts and similar materials.



Rotary kilns for continuous calcining, roasting or oxidizing.



Rotary Coolers for continuous cooling of hot materials after drying or calcining.

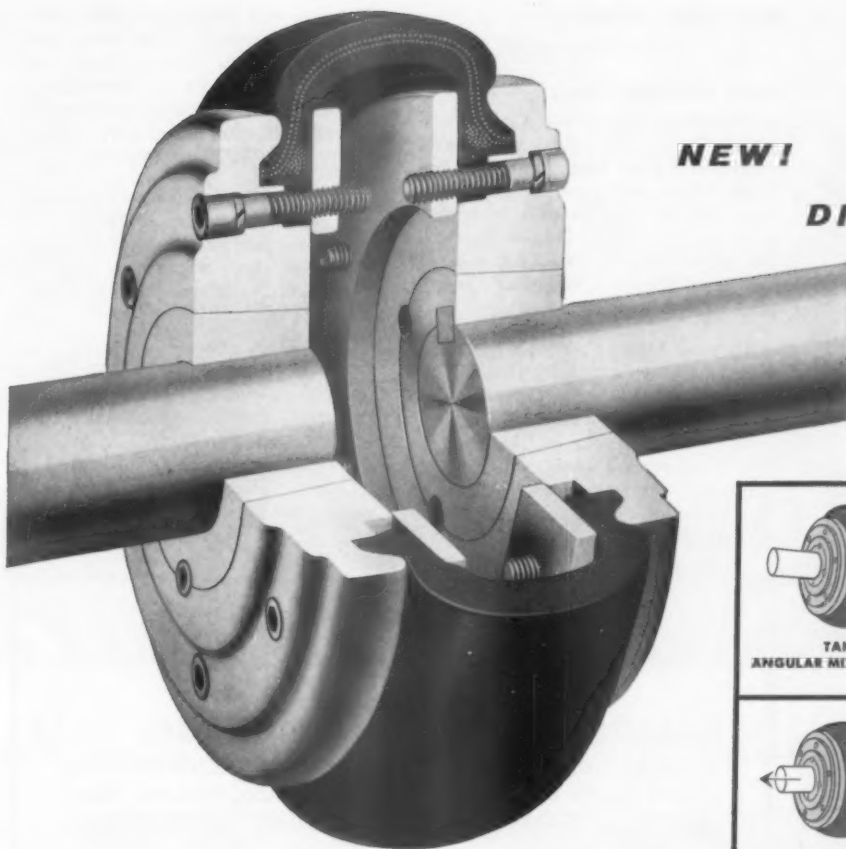
Sixty years of experience in drying, heating and cooling hundreds of materials is available to prospective users of Ruggles-Coles Equipment.

Write for Bulletin AH-438-7

**HARDINGE COMPANY, INCORPORATED**

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**NEW!**

**DIFFERENT!**

**DODGE**

# Para-flex

## FLEXIBLE CUSHION COUPLING

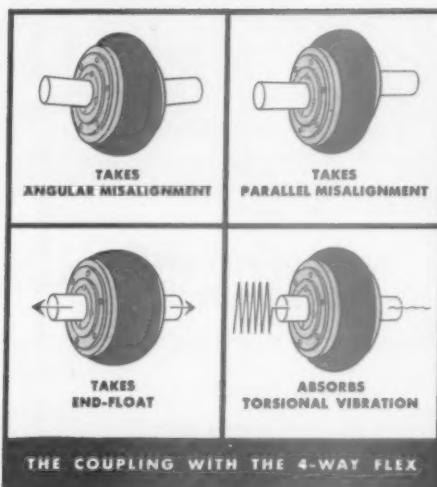
THIS coupling "swallows up" shaft misplacements. It automatically compensates for end-float, parallel misalignment, angular misalignment or *any combination of all three*. Moreover, it cushions the stresses of shock loads. And it absorbs torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

Here is a new type of performance—made possible by the development of a tire-like flexing element. Synthetic tension members, bonded together in rubber, give this element the stamina and dependability of modern, high-speed, high-load, shock-absorbing truck tires—and the ability to respond magically to all manner of changing shaft conditions.

Para-flex takes minimum space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings—no reboring, no machining. Safety is promoted by flush design; there are no protruding

parts. No lubrication is required, no periodic inspection. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine*.

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 825 hp at 1200 rpm. Call your distributor for early delivery to *make your own test*. You'll witness something revolutionary! DODGE MANUFACTURING CORPORATION, 2600 Union, Mishawaka Ind.



# DODGE

of Mishawaka, Ind.



**CALL THE TRANSMISSIONEER**—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."



### "WHAT'S 'BONDED BUY'?"

When you make a "Bonded Buy" purchase from your Caterpillar Dealer on any used Cat-built machine, he gives you a Guarantee Bond of up to \$10,000.

And you can be sure that the used equipment you buy is in the best possible condition at the lowest reasonable price.

### "ANYBODY ELSE OFFER 'BONDED BUY'?"

No—just your Caterpillar Dealer.

### "DOES HE OFFER ANY OTHER KIND OF PROTECTION ON USED EQUIPMENT?"

"Certified Buy." This covers any make machine and includes his written guarantee. And "Buy and Try"—which carries a written money-back agreement.

### "WHAT DOES ALL THIS MEAN TO ME?"

That you can be sure of a safe buy when you buy used equipment from your Caterpillar Dealer. Call him today.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

## CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**BEST BUY IN NEW  
AND USED EQUIPMENT**

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## INDUSTRY NEWS

(Continued from page 62)

### New incorporations

TRI-STATE AGGREGATE Co., Lewisport, Ky., with 1,000 authorized shares, has been incorporated to operate a sand and gravel mining company and to deal in ores, minerals, tools and machinery. Guy N. Ramsey, Tell City, Ind., L. R. Chapman of Lewisport and A. J. Blume of Cloverport are incorporators.

DENVER TERRA COTTA Co., Denver, Colo., has been granted a charter. Incorporators are John W. Gannon, Lorene M. Bratt and Katherine Gilstrap. Directors are Arnold M. Johnson, C. Roy Muchow and Henry Nadorff. The firm will produce, excavate, mine, transform and deal in earth, clay, sand and gravel.

BOOTH AND SMITH SAND AND GRAVEL Co., Georgetown, Colo., with Frederick R. Booth, Francis Smith and George R. Gaubatz as incorporators and directors, has been organized for operation in sand and gravel. Capitalization of \$10,000 was reported.

LYNN LONDON AND SON, Dean Landon, of Sioux Falls, S. Dak., have started a sand and gravel business. They will deal in crushed, screened and washed sand and gravel in a year-round operation.

### Basic states earnings

BASIC INC., Cleveland, Ohio, reported its 1957 total income of \$23,-824,117, net cash income of \$2,720,-011 and net income of \$1,397,572. The latter amounted to \$1.72 per common share outstanding.

END

## Calendar of Coming Conventions

### May 11-13, 1958—

Empire State Sand, Gravel and Ready Mix Association, Annual Meeting, Syracuse Hotel, Syracuse, N.Y.

### May 12-14, 1958—

National Lime Association, Annual Convention, Grand Hotel, Point Clear, Alabama

### May 14-16, 1958—

National Industrial Sand Association, Annual Meeting, The Homestead, Hot Springs, Va.

### May 24, 1958—

Colorado Minerals Beneficiation Subsection Meeting (Society of Mining Engineers of AIME), Colorado Springs.

### June 22-27, 1958—

American Society for Testing Materials, 61st Annual Meeting and Exhibit, Statler and Sheraton-Plaza Hotels, Boston, Mass.

### July 21-22, 1958—

Expanded Clay and Shale Association, Midyear Meeting, Cosmopolitan Hotel, Denver, Colo.

### July 23-25, 1958—

National Crushed Stone Association, Semi-annual Meeting, Board of Directors, The Homestead, Hot Springs, Virginia.

### September 17-19, 1958—

Rocky Mountain Minerals Conference (AIME), Salt Lake City, Utah.


### Sept. 30-Oct. 2, 1958—

National Sand and Gravel Association, Semi-Annual Meeting, Board of Directors, Tropicana, Las Vegas, Nev.

### October 23-25, 1958—

Mid-America Minerals Conference (AIME), St. Louis, Missouri.





This D9 worked 9 hours a day, 6 days a week, in a quarry for Amis Construction Co., Oklahoma City, Oklahoma. Its ability to move anything it tied into, even in bad weather, helped maintain steady production for the company.

## AMIS GETS BIG PRODUCTION FROM THIS D9

In a quarry northwest of Augusta, Kansas, this CAT D9 Tractor with No. 9S Bulldozer proved the mainstay of production for Amis Construction Co. Here it's stripping 6 to 8 feet of rock and clay topsoil to get to crusher rock. Along with other Caterpillar Diesel Tractors, it supplied a crusher turning out 3000 tons a day for use on construction of Sections 9 and 10 of the Kansas Turnpike. Thirty-five trucks hauled the material to the job. During bad weather, when the trucks could not haul, the rugged yellow tractors kept right on working, enabling the company to build up stockpiles.

"In my 14 years' experience with Caterpillar-built machines, I can't say anything but good," reports Harold Wilkins, General Superintendent. "We have a minimum amount of trouble with them and can always get repairs fast and right from our Caterpillar Dealer. Our operators like the machines' ease of operation and the fact that we can always move anything we tie into with them."

### ***Big power for fast production***

The Turbocharged D9 has set new production records on job after job. Its 320 flywheel HP, with 260 HP at

the drawbar, means *fast* production on any kind of *big* job. Yet, heavy as the D9 is—more than 29 tons—its hydraulic boosters provide power for steering, braking and master clutch use, making the D9 easy to operate. Its in-seat gasoline starting system provides quick, sure starts. And it's easy to service. For example, oil clutch, torque converter, transmission and steering clutches each can be removed individually.

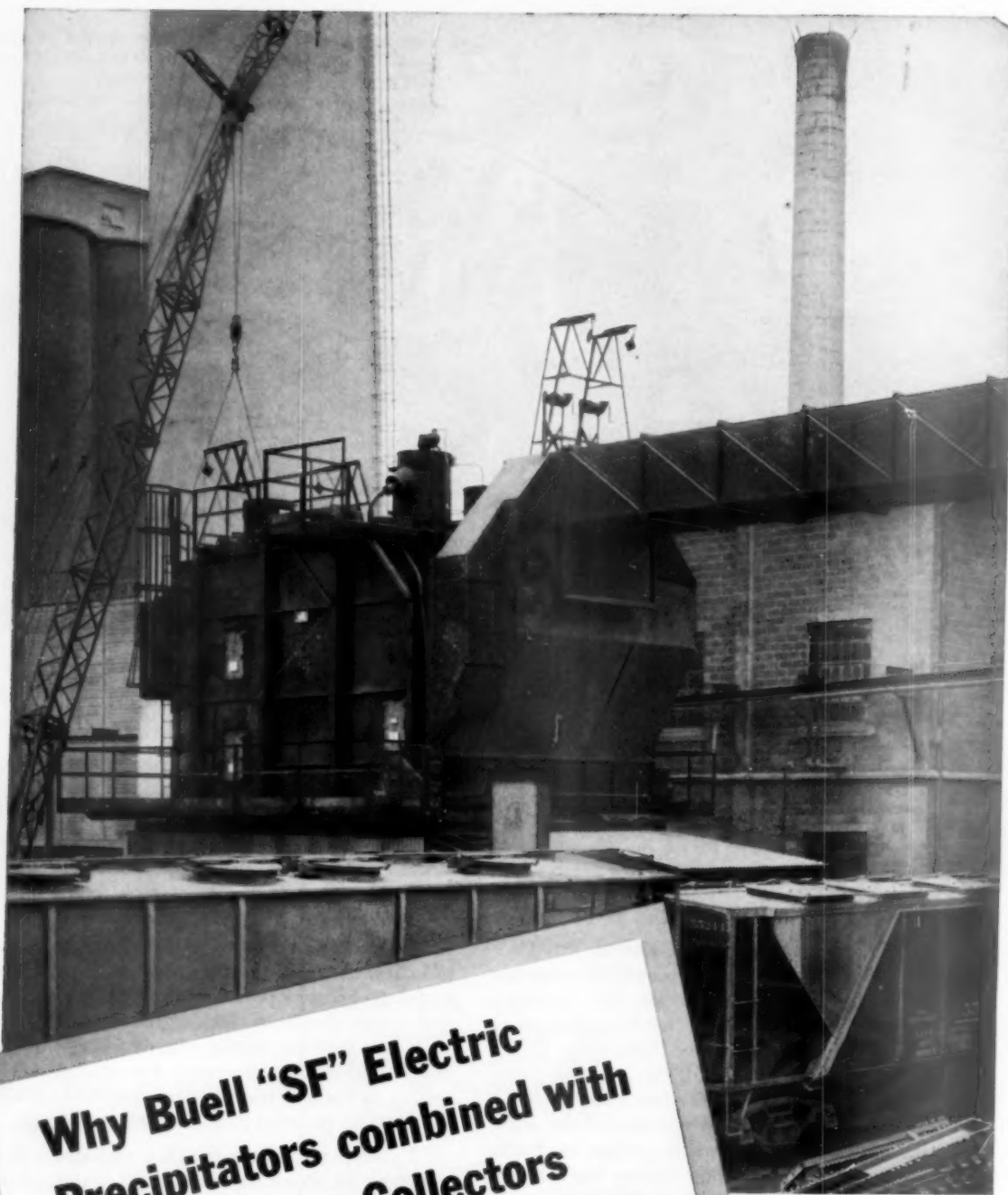
To match your needs, the D9 is available with torque converter or direct drive with oil clutch. Ask your Caterpillar Dealer to show you how this giant can step up your production and profits!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

# CATERPILLAR

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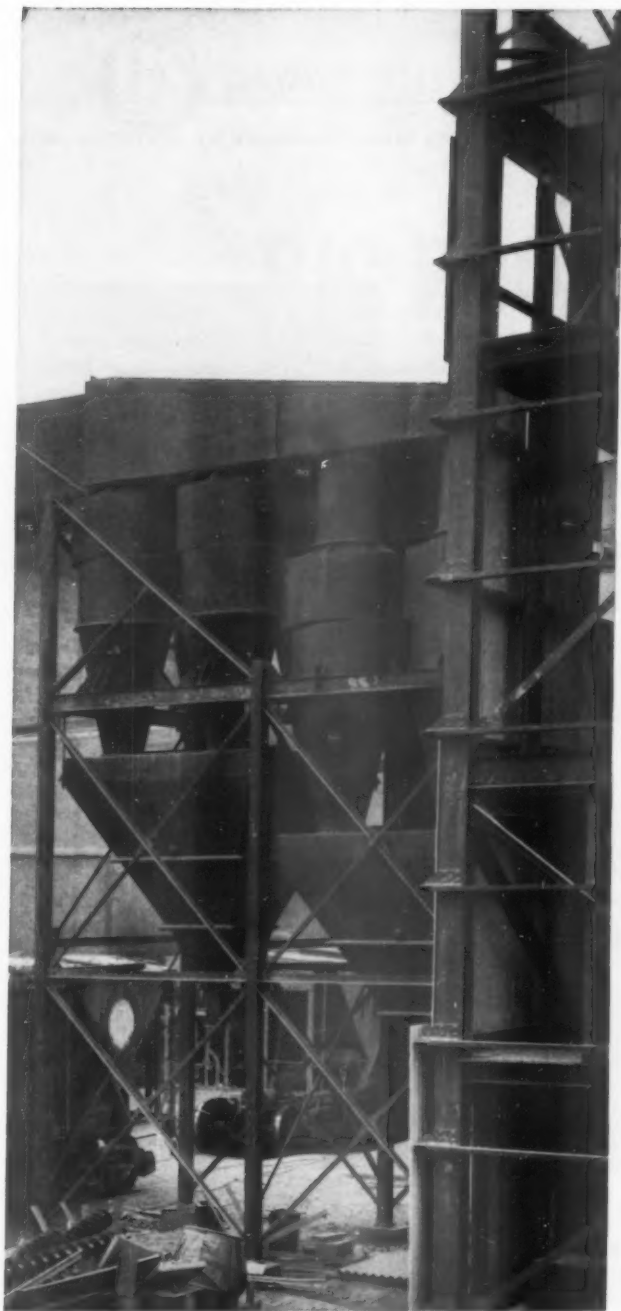
**STEP UP  
PRODUCTION AND  
PROFITS WITH THE D9**



**Why Buell "SF" Electric  
Precipitators combined with  
Buell Cyclone Collectors  
assure an extra percentage  
of EFFICIENCY**



*Experts at delivering*



**W**hen Buell "SF" Electric Precipitators and Buell Cyclone Collectors are installed in tandem . . . you have the ultimate in efficiency *under all conditions*. Because their basic principles of operation are different, they complement each other in such a manner as to provide two important advantages: (1) increased efficiency, and (2), improved stability. For example, changes in the characteristics of dust particles or gases will not appreciably affect the percentage of efficiency of the combined units.

Buell "SF" Electric Precipitators with their exclusive "Spiralelectrodes" are unequalled in the recovery of fine dust particles. Featuring continuous rapping and many other exclusive design advantages, they are your guarantee of that all-important extra percentage of efficiency—often the difference between a highly profitable recovery operation and a break-even one.

Buell Cyclone Collectors with their large diameter, clog-proof design, also offer you the kind of efficiency that results in many extra tons of recovered valuable dust. Whereas the secondary air currents in most collectors tend to lower efficiency, Buell's exclusive shave-off design utilizes them to recover more dust.

For detailed information on how Buell equipment is delivering that all-important extra percentage of efficiency in the cement and lime industry, write Dept. 17-E, Buell Engineering Company, 123 William Street, New York 38, New York.

*Free Booklet*

Describes all three  
Buell Systems for the recovery  
of valuable dusts.

**buell**®

*Extra Efficiency in* **DUST RECOVERY SYSTEMS**

ROCK PRODUCTS, May, 1956

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# HINTS AND HELPS

Profit-making ideas developed by operating men



## Liquid cyclone efficiency

ONE WESTERN SAND PRODUCER felt that his single 25-in. liquid cyclone was not getting all the values out of his tailings. He solved this problem by hooking up a second liquid cyclone in series with the first.

After nearly a year of operation he feels that the yield of fine sand justifies the cost. In any event, he can use or discard the products from either or both liquid cyclones.

## Boulder scalper



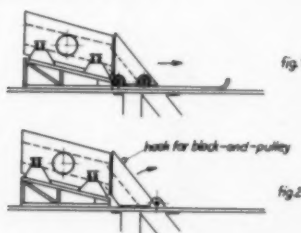
WHEN AN UNDERWATER GRAVEL operation is full of well-scattered boulders it is a real problem to keep them out of the plant conveyor system and a problem of what to do with them. Here's how a northwestern producer solved his difficulties.

The discharge end of the crescent drag scraper was located at the top of a high bank above an inclined bar grizzly. The slope of the bank and the incline of the grizzly tended to make unwanted boulders roll across the bars. Good gravel worked its way

through the grid to the conveying system below.

Another drag scraper at the foot of the screen carries the donikers to a spoil pile in an out-of-the-way part of the pit.

## Movable chutes



A WEST GERMAN GRAVEL producer mounted the discharge chute of one of his vibrating screens on rollers and rails to make it easy to service the screen. He found that this was done so seldom that the rollers became so fixed with rust and dirt that it was more of a job than ever to remove the chute.

A better solution to the problem proved to be a hinge at the back of the chute with a hook at the top for a block and tackle. Now the chute is easily lifted for inspection, or removed just as easily if necessary.

Herbert Motek  
Essen-Werden,  
Germany

## Sand recovery

WHERE A WESTERN SAND PRODUCER splits the flow between a single spiral classifier to recover large sand and a double screw classifier for the fine sand, he found that a great deal of an intermediate size was lost in the overflows. To remedy this he cut the discharge pipe and put in a V-bottom header box.

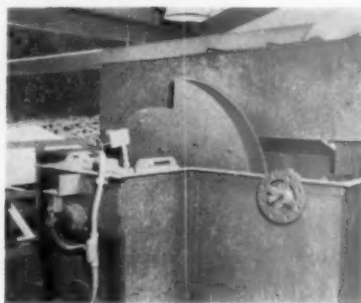
The rate of flow is reduced just enough to allow about 7 tph. of the desirable sizes to settle out in the bottom. A suction line in the tank pumps this material to a liquid cyclone suspended just above the discharge end of the double screw classifier and the sand specifications are brought back to requirements.



## Metal detector

THE AWKWARD DEVICE which frames this belt conveyor is a metal detector loop. Any metal object which enters the magnetic field stops the conveyor, and the loop senses all metals, whether magnetic or not. This gadget has paid for itself many times over by rejecting tramp metal which might damage the secondary cone crushers which follow the belt conveyor. Since it would stop production every time metal splicing fasteners went by, the belt must be spliced by being vulcanized.

## Scoop feeders



SCOOP FEEDERS have been standard equipment for cement mill equipment for many years, to feed slurries or wet mixtures to ball mills, rod mills and kilns.

They are so versatile that they can certainly find wider application in other industries where either free-flowing dry materials or fluid pulps must be fed. Their size can be changed to suit design conditions, the rotating speed varied and the width and number of scoops altered.

(Continued on page 72)





CONVEYOR BELTS

## BIG BOOM on the Great Lakes features 54" wide U. S. Belt



To keep pace with the stepped up demand for coal and limestone, the Columbia Transportation Division of Oglebay Norton Company examined their veteran of the Great Lakes, the bulk carrier W. W. Holloway.

Could enough life be put in the old girl yet to meet the beefed-up demand? *It could.*

By converting her to a self-unloader, by installing a 245-foot conveyor boom (one of the largest on the Great Lakes) and finally, by equipping the boom with a 54" U. S. Rubber Conveyor Belt, today the 52-year-old ship is operating profitably. Each hour, 3500 tons of 90-lb.

limestone are dumped onto the conveyor belt and carried ashore at a speed of 625 fpm. Because "U.S." belts are built to carry heavy loads and withstand abrasion, this U. S. Giant® is operating perfectly, helping to turn this ship from a has-been into a heroine.

For conversion, replacement, or new installations, U. S. Rubber has the right belt and the best engineering skills to do the job. Contact your local authorized "U.S." Distributor, any "U. S." branch, or write us at Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.



Mechanical Goods Division

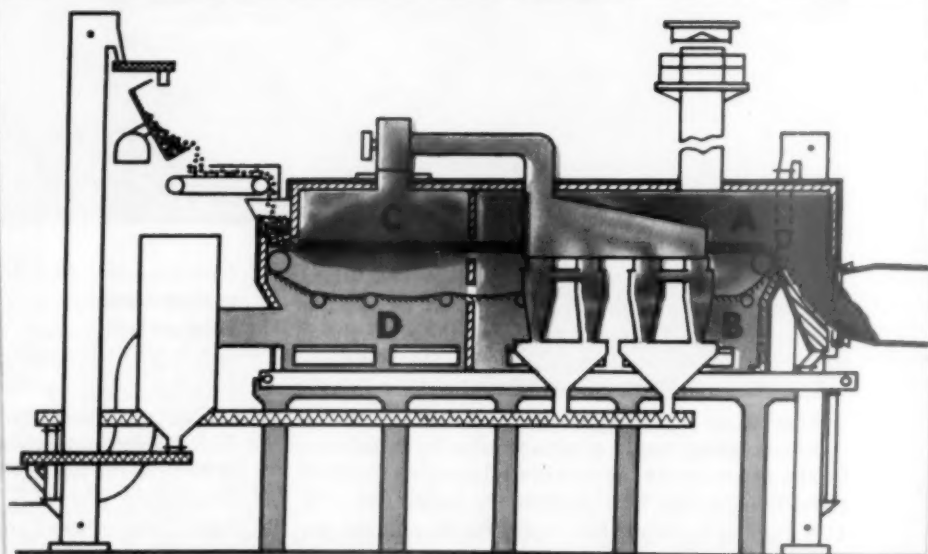
# United States Rubber

See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N. Y.

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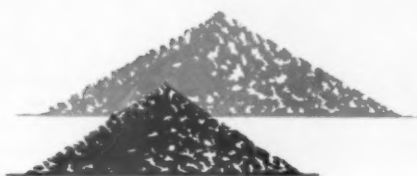
ROCK PRODUCTS, May, 1958

Clean and...  
**EFFICIENT**



ACL is an Allis-Chalmers trademark.

**A new concept in cleanliness!** The new *ACL* system offers lower dust loss — cleaner cement production. Stack discharge is merely a wisp. Complete dust-free plants have been constructed within large cities and in suburban neighborhoods. The system meets even the most stringent municipal air pollution codes. Other advantages are: maximum burning efficiency, reclamation of material, power savings and small space requirements.



**40% less fuel  
per barrel  
of clinker**

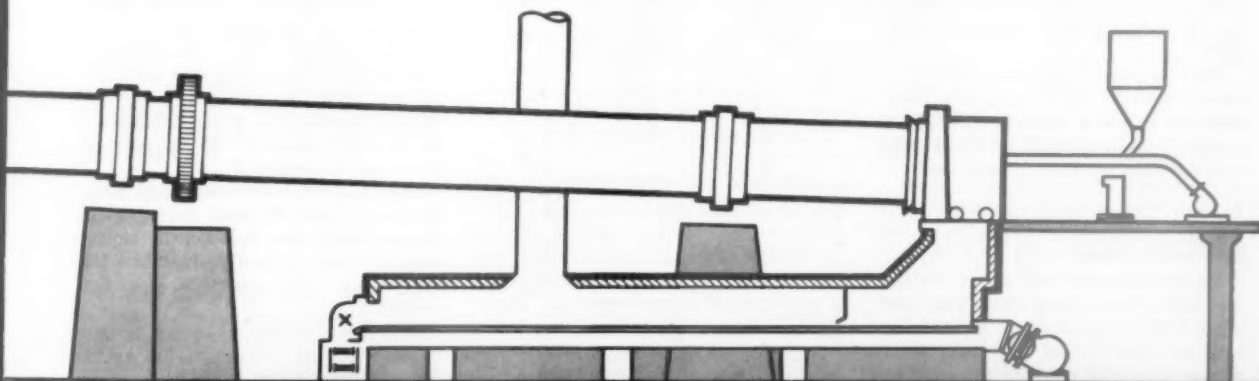
*ACL* systems now in operation consume fuel at an average of 600,000 Btu per barrel of clinker. Compare this to fuel requirements of conventional long, dry-process kilns which use from 800,000 to 1,000,000 Btu. And the *ACL* double-pass system is designed to use any conventional fuel—powdered coal, fuel oil, natural or coke oven gas.

For details, ask your A-C man for a copy of Bulletin 07B8431. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

#### **How the *ACL* double-pass system works**

Partial calcining and dust reclamation take place as hottest gases pass through pellet bed on traveling grate. Gas temperatures are reduced from about 1800 to 500 degrees in this first pass (A to B). Next, gases pass through cyclones where larger dust particles are

removed, and carried back to pelletizer. Final dust filtering takes place as gases pass through moist pellets on feed end of grate. In the second pass (C to D) gas temperatures are reduced more. Heat of kiln gases is transferred to material.



# **ALLIS-CHALMERS**



## HINTS AND HELPS

(Continued from page 68)

### Save screens

ONE OF THE PROBLEMS operators have with screening large gravel or stone occurs when the openings in the screen plates enlarge to let oversize materials through. This can happen on rotary screens as well as on vibrating scalping screens.

Since these screen plates are too heavy to be needlessly abandoned, one western aggregates producer built up the enlarged openings of his rotary screen plates with hard-surfacing rod. He produces cobbles more accurately sized, and has been able to salvage several heavy screen plates for this rugged service.

### Make your own stacker



RADIAL STACKERS are widely used in the West where contractors and aggregates producers prepare sand to U. S. Army Corps of Engineers standard specifications. This means that segregated piles of washed sand must drain a minimum of 72 hours before use in mass concrete structures like dams.

This conveyor was converted to a stacker with the use of a gin pole. The conveyor frame is pivoted at the base so that it can be swung in a wide arc to make three separate piles of sand.

### Belt hold-down

TO HOLD DOWN OUR BELTS we invert sets of troughing idlers over the belts. The center rollers are left out, and the side rollers are set just a couple of inches clear of the edge of the belt. Then, if the wind lifts the belt it just hits the rollers above, causing them to turn but still holding the belt down. No additional materials are needed and there is no chance of tearing the belt on thin pieces of steel over the top of the belt.

We also use the same arrangement

on our loading belt which has a vertical curve and a slack adjuster on it. When started, it naturally comes up off the idlers. Then it comes up against the inverted rollers and they guide it.

John S. Abrams  
Tempe City, California

### Compacts roadbed

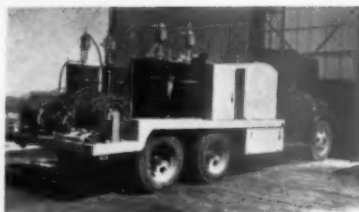


AN EASTERN ROCK PRODUCER knew that he would eventually bring a rail spur into his plant. After the roadbed had been carefully graded, surfaced and ditched, plant trucks were routed over the site of the new spur. In this way the roadbed was densified and compacted by the action of the heavy trucks.

At the same time the tailings flume was elevated and placed so that it

would not interfere with cars or locomotive when the spur was finally in operation.

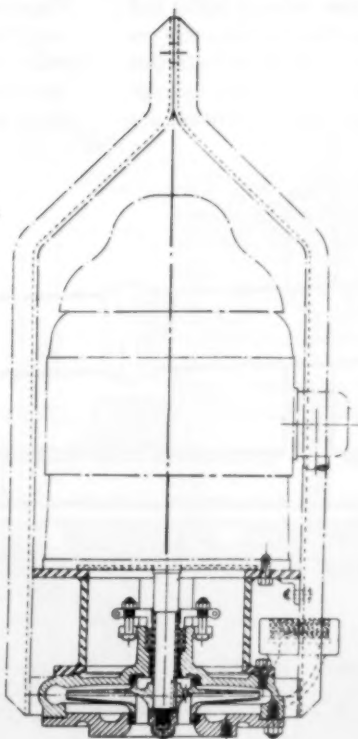
### Service truck



OUT IN THE WIDE OPEN spaces of the West, production machinery is often located in remote parts of the property, and equipment is widely scattered. It is often a long and difficult project to bring trucks, shovels, loaders, bulldozers and other portable units to a central service point.

A western cement producer solved the problem by mounting lubricants and greases on the back of a truck, which makes regular visits to service each piece of machinery wherever it may be. An air compressor provides the power to do pressure lubrication as well as to pump crankcase oils through the coils of hose when the machinery is out of reach of the service truck.

### Shop-made bail keeps deep well pump on even keel



THE VERTICAL WELL PUMP with the motor on top is so top heavy that it is often difficult to handle, even with cranes. Securing slings has to be done accurately to equalize the load and to permit the pump to be set level on the foundation.

We used a special pump as an emergency unit for dewatering the pit after summer deluges. The ever-changing contour of the pit required a different site each time. The problem of conveying and handling the pump resulted in the specially designed bail for picking it up and for setting it.

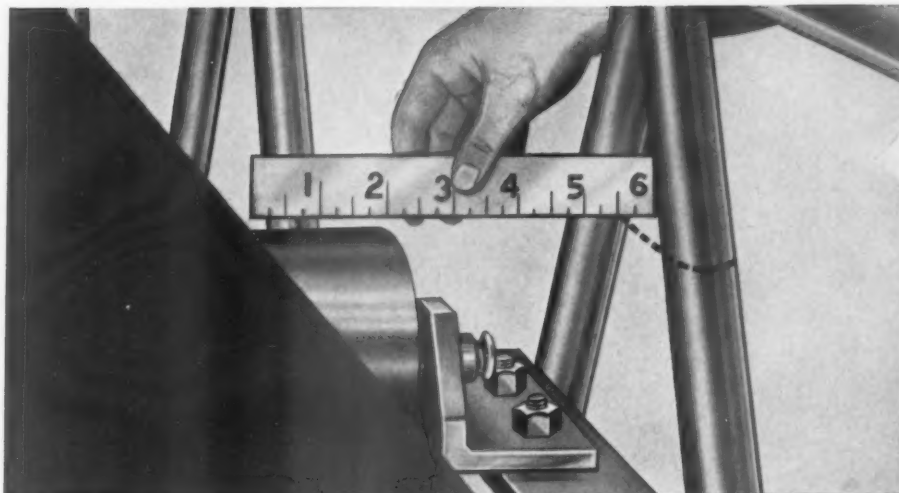
The bail was fabricated from steel stock—a 3-in. T with  $\frac{3}{8}$  in. thick flanges which were bent on the blacksmith's forge normally used for bit sharpening. The assembly was arc welded.

Just a minor item upset the perfect balance of the assembly—the splice box for the 2,300-v. cable on the side of the motor which projected beyond the support. However, the bail was assembled and secured just enough off center to compensate for it.

Paul C. Ziemke  
Clinton, Tenn.

END



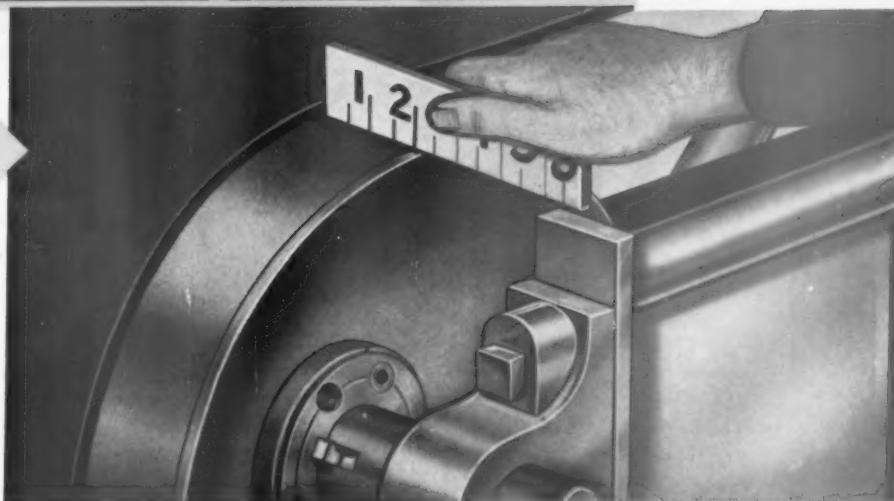


#### WIDER FRAME...

MARCO Tubular Frames are widest in the industry. They provide 100% more space (5½") in the critical area... between belt edge and nearest frame member. Pedestal type return idler brackets are used, instead of hanger brackets that confine and damage belt.

#### WIDER FACE PULLEYS...

MARCO is first with modern pulley specifications. 2" between belt and pulley edge... provides 100% greater protection than outmoded standards. Reduces possibility of belt destruction caused by "belt wandering" in high tension areas.



## WHY RISK COSTLY, CONVEYOR BELT DAMAGE?

Only wider, MARCO Tubular Frame Conveyors provide maximum 'belt-edge' protection

Repairing or replacing conveyor belt represents the largest maintenance expense in a conveyor installation. To prolong belt life, MARCO conveyors are first to have all these belt-protecting features.

**Wider Frame:** Completely out-modes other conveyors that narrowly confine and damage belt should severe 'belt-wandering' occur.

**Wider Face Pulleys:** MARCO'S wider frame permits the use of modern, wider face pulleys to further protect belt from damage should 'belt-wandering' occur.

**All Tubular Members:** MARCO Tubular Frames are more rigid. Constructed of the strongest known structural member, these frames are modern... and resist material and water build-up. Sharp 'belt-cutting' edges are eliminated with this exclusive construction.

**Rigid Joint Construction:** Another MARCO exclusive... 4 bolts in each connection... 16 in each joint. Not the usual 1 or 2 per connection. Joints are more rigid. Resists frame misalignment, simplifying belt training and increasing belt life.

If wind, uneven loading or other factors should cause 'belt-wandering'... with a MARCO frame you have the most complete protection possible

against costly 'belt-edge' damage. This greater protection is yours at no greater cost.

**MARCO'S Quality and Exclusive Features Mean More for Your Conveyor Dollar...**

Remember, your conveyors are not mere plant accessories... they deserve the attention of a specialized manufacturer offering modern specifications, carefully and properly designed to meet your most exacting requirements. It will pay you to check MARCO quality, exclusive features and proven performance record before you buy.

For more information see your Marco distributor or contact E. F. Marsh Engineering Co., St. Louis 10, Mo.

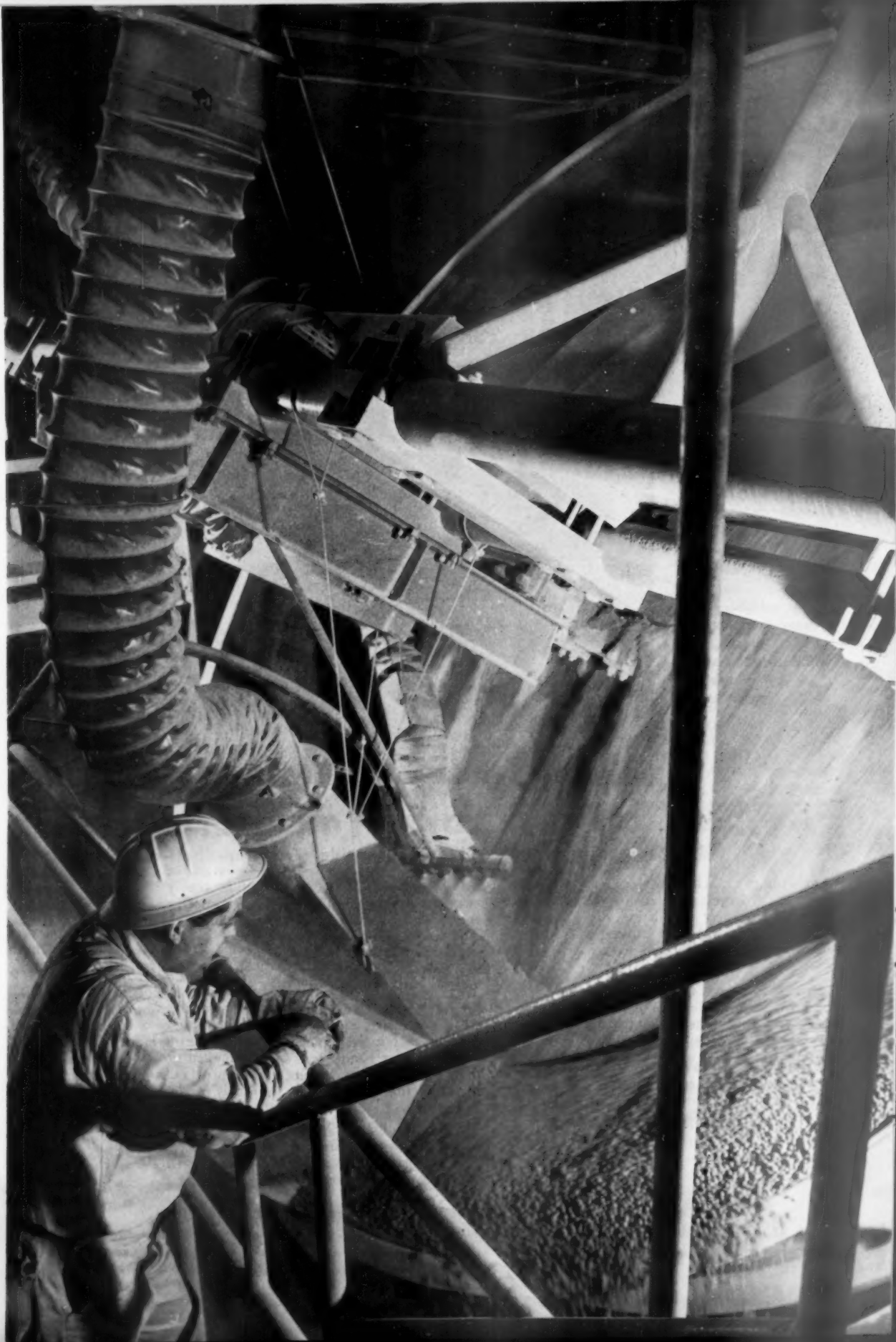


\*Trademark Reg.

#### engineered MARCO products:

Tubular Frame Belt Conveyors • Conveyor Idlers • Solid and Self Cleaning Steel Pulleys  
Bucket Elevators • Control Gates • Feeders • Bins

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# Making cement with pellets

**ACL installation has almost doubled  
capacity of Diamond Portland's plant**

By **ELWOOD MESCHTER**

**T**HE INSTALLATION OF THE ACL cement-making process at the Diamond Portland Cement Company in Middle Branch, Ohio, has added over a million barrels of capacity to this producer's potential. The cost of this pelletizing and traveling-grate firing system was about \$5 million. While it is not the first installation of the ACL process in this country, it has attracted industry-wide attention. Cement production began in October, 1957, and announcement of the details of operation were made by Diamond in December. So successful is the process that more than 70 installations have been made around the world.

With a total capacity of about 2½-million bbl., Diamond is not a large producer in the cement industry. However, with this low-cost expansion the company has vastly improved its ability to serve its present customers more effectively and to expand competitively into nearby industrial markets for cement. Middle Branch is only a few miles from Canton, the heart of a burgeoning industrial complex which includes western Pennsylvania, eastern Ohio and the panhandle of West Virginia.

Full scale production and peak efficiency has not yet been achieved, but the first few months of operation have shown the outstanding advantages of the new system. Big savings in fuel expense are already obvious, even using low-cost local supplies of bituminous coal. The clinker, which retains the spherical shape of the original pellet, is easier to grind than regular clinker. This feature promises savings in power requirements and lower maintenance of finish ball mills.

One of the primary reasons for installing the ACL process was the expectation of eliminating the dust problem. The plant is in the path of mushrooming residential expansion coming toward it from nearby Canton and Akron. The first results of continuous operation have

**This 15-ft. revolving pan feeds ¼ to ¾-in. pellets to the traveling grate**



An oscillating belt conveyor feeds the pellets into the traveling grate

## Making cement with pellets

*continued . . .*

shown the effectiveness of the "double pass" traveling grate design to maintain almost negligible stack loss of dust.

Key to the successful operation of the ACL system is in the pelletizing process. The pellet-making mixture must be composed of the precise amounts of clay and limestone, yet must make a stable, round pellet of a size and density which will fire effectively on the grate ahead of the rotary kiln.

Diamond is fortunate to have a shale and limestone which makes excellent pellets. A well-blended mixture of about 80-percent limestone and about 20-percent shale produces perfectly formed pellets between  $\frac{3}{8}$  in. and  $\frac{5}{8}$  in. diam. These pellets do not break down into fines which might choke the grate and they are hard enough to retain their shape before firing.

**Raw materials** are carefully prepared for pelletizing. Limestone is trucked from a quarry about six miles away, and 12 x 15-in. stone is reduced to



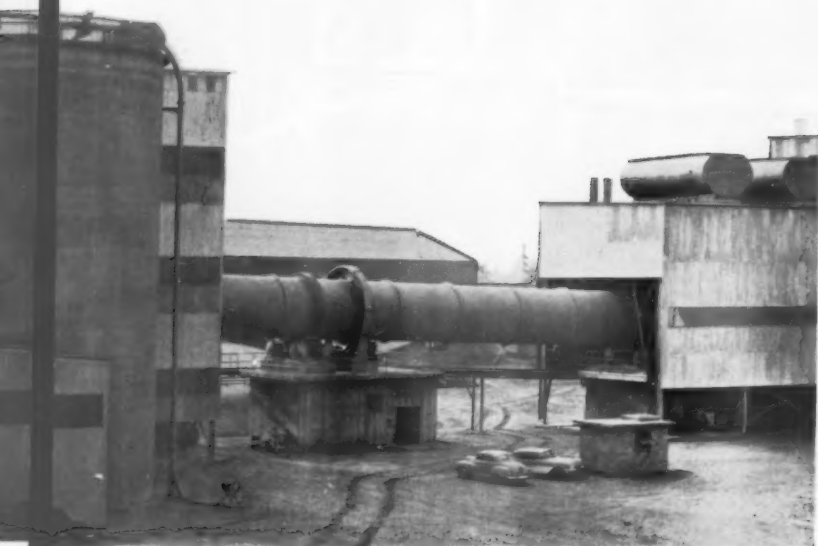
minus 5 in. with a 30 x 42-in. jaw crusher. A pair of short inclined belt conveyors take the crusher product and deliver it to the inclined belt conveyor to the secondary crusher feeder.

A reversible 42 x 82-in. secondary impact crusher reduces the rock to minus  $\frac{1}{2}$  in. and drops it on an inclined belt conveyor system which returns it to the top of the building to be screened. Oversize is taken out in a pair of 5 x 12-ft. vibrating screens, and dropped down to the crusher to be re-crushed and recycled. An inclined belt conveyor system elevates finished material to the top of the tower. Raw crushed limestone is stored on the ground beside the ball-mill building and is reclaimed with a clamshell crane.

Crushed shale is stockpiled within reach of the same crane that reclaims the crushed limestone. Each material is stored in huge concrete bunkers fitted with mechanical feeders that load the ball mills with the raw materials in correct proportions. From the raw material storage bins there are two parallel systems which can be operated independently of each other right up to the single conveyor which loads the traveling grate.

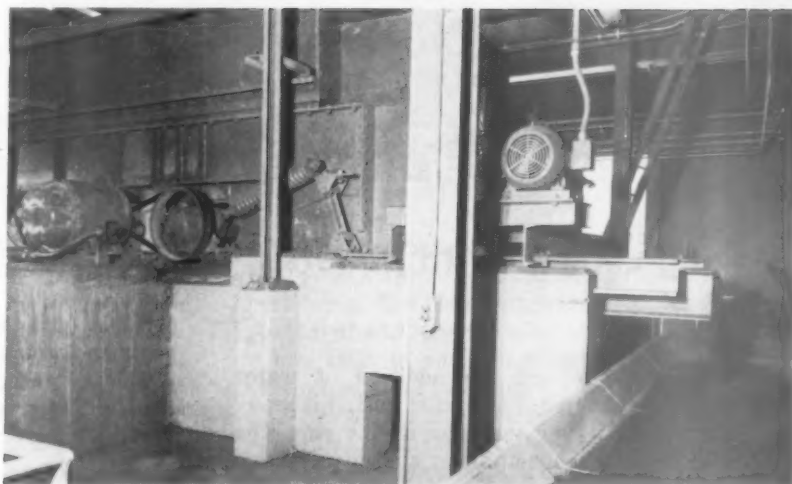
**The ACL process.** Raw materials are fed to one of a pair of 10½ x 17½-ft. ball mills each of which discharges to a 16-ft. air separator fitted with a





Raw materials are blended pneumatically in these homogenizing tanks, left, to assure exact dispersion of the clay in the limestone. The pelletizing and grate building is behind the tanks

This air quenching cooler recovers the sensible heat from the cement clinker for secondary combustion air in the kiln. Clinker is discharged from the cooler onto an oscillating apron conveyor and then carried to a storage building



hot-air dryer. The acceptable material is completely dry and about 85 percent through 200 mesh. This is pumped to one of two 40 ft. diam. x 48 ft. deep homogenizing tanks, where the raw materials are thoroughly blended pneumatically to assure complete dispersion of the fine clay in the ground limestone. This part of the process is vital to the success of the plant, for even though the mixture makes good pellets, each pellet must contain the correct amount of each raw material.

The mixed materials are pumped to holding tanks ahead of the two pelletizing pans where the pellets are formed. Materials are withdrawn from these bins with rotary vane feeders into screw

conveyors to bring them to the bucket elevators. The elevators lift the raw materials above the pelletizers which are loaded through adjustable flexible spouts.

Each of the pelletizers is about 15 ft. diam. and about 3 ft. deep and produces pellets from  $\frac{3}{8}$  to about  $\frac{5}{8}$  in. diam. The operator can control pellet formation by changing the angle of inclination of the pan, normally about 60 deg.; the pan speed, which is usually 8 to 10 rpm.; and the rate of feed of water and raw materials. The addition of 12 to 14 percent water makes a suitable pellet.

Raw materials are chuted into the rotating pan, and are sprayed with water. The tumbling



*"... continuing prosperity of our industry depends almost solely on whether or not further new capacity will be built."*

## Cement industry needs more large-scale modernization

By W. A. WECKER

W. A. Wecker, president of Marquette Cement Mfg. Co., recently addressed a meeting of the Investment Analysts Society of Chicago. The following remarks are taken from that talk. As a preface to his discussion of the prospects of Marquette and the industry in general in 1958, Mr. Wecker examined 1957.

**F**OR MARQUETTE, although our physical volume was up over 1956 and net volume was substantial, the year was disappointing in many respects. The unusually bad weather in many sections of our market delayed much construction, particularly of highways, and this together with the fall-off in maintenance and repairs, resulted in considerably fewer shipments than budgeted. Consequently, year-end inventories were much greater than for 1956. These greater inventories will bring about full storages before construction starts up again in the spring, which will require some production curtailment. We also experienced unexpected production difficulties at several plants. These did not finally affect our volume, because of the reduced demand, but they did increase operating costs...

**What about 1958 prospects?** Present estimates of physical volume of new construction indicate a moderate rise for the year. But political developments and other factors... may exert unusual influences on the trends throughout the year. If vol-

ume is maintained about as forecast, and no further fall-off takes place in the maintenance and repair market, cement use should increase somewhat more than... new construction. The principal reason for this is that highway building, a heavy user of cement, represents a greater portion of total construction than heretofore.

In our 18-state market, total construction volume, including maintenance and repairs, should parallel the country-wide trend. A probable exception is that proportionately more unshipped cement on delayed highway projects was carried over in our market. With this plus factor, our market could regain at least the seven percent volume loss... suffered in 1957.

Now that new capacity building has overtaken present and near-future demand, we can turn our full attention once again to the highly important work of large-scale plant modernization. This is the urgent present-day need, not only in our company but in most of the industry as well. The level of operating efficiency must be raised substantially if the industry is to retain its traditional competitive position. Large amounts of capital must be spent to accomplish this.

**We began a huge plant-modernization program** last year with the replacement of old, inefficient sections of the plants at Nashville and Superior. A total of \$3,192,000 was spent for such work.

For 1958, in addition to completing the Nashville project and installing a giant stripping shovel at Superior, we will undertake major work in the remaining older sections of the Rockmart plant. It has been determined that production cost there can be substantially reduced if this work is done, and that the savings to be made will fully justify the required capital outlay.

It is our intention that only internally generated funds be used for these modernization expenditures and that no reduction of working capital be permitted.

Beyond 1958, we see at least three more years of large-scale work ahead of us.

Let's look at a few other aspects of our business. For one... are we keeping pace with rising cement use in our market? We have maintained throughout the years a fairly constant share of the rapidly growing cement use in our market.

*Please turn to page 134*

# Air pollution laws come to Lehigh Valley

**T**HE LEHIGH VALLEY of eastern Pennsylvania, cradle of the portland cement industry, has suddenly grown into a big, boisterous adult flexing his muscles at the hand that used to rock his cradle. Over the past year, three Lehigh Valley towns have voted anti-pollution ordinances; indications are strong that a number of other towns in the same area will pass similar ordinances before too many months. The situation that preceded these ordinances and the problems that have resulted since their passage are symptomatic of a social revolution all over the country that is having a profound effect not only on cement manufacturers but all members of the rock products industries. For this reason, the Lehigh Valley dispute merits a close examination here.

Dust, of course, is an age-old problem in the cement industry. But the severity and nature of the problem has changed radically over the past half century. Perhaps one of the last places to feel this change was the Lehigh Valley, where so much cement production is concentrated. For many years after the establishment of the cement industry there, dust was considered by the residents of the area simply as an occupational hazard—more than offset by the employment, tax money and other advantages offered to the community by the cement industry.

But during the last decade—really since World War II—a minor social revolution has taken place in the Lehigh Valley (as well as other parts of the country). Other industry has come into the area, reducing the community's dependence on the cement industry. Times have been good and employment high; as a result, citizens have become impatient with conditions which they put up with before. The theory of industrial contribution to a community has grown and burgeoned, and many companies have hired specialists in what is called community relations. And technical developments have come along offering greater and greater efficiency in the control of smoke and dust.

In view of these things, it was inevitable that the citizens of cement-company communities would demand improvement in the dust problem. The cement companies reacted to this change in a number of different ways. Most recognized fully what was taking place and worked closely with local citizens to help them better understand the industry problems and to work out some solution compatible to both. But there still is a wide range of feeling and enlightenment on the problem in the Lehigh Valley. There is also a lesson to be learned for the whole industry in what is taking place in Northampton, Stockertown and Nazareth—the three towns that have passed anti-pollution ordinances—and the other communities in the general area which are considering similar action.

**The trouble starts.** One of the first real overt signs of trouble in the Valley came in 1948, when the Borough of Northampton hired consulting engineer William G. Christy to investigate and report on the dust problem in the Northampton area.

Mr. Christy's report said, in part: "The deposits of dust in every part of Northampton borough are very heavy. Deposits are quite noticeable on sidewalks, steps, porches, automobiles and on roofs and the sides of houses. An examination of samples shows that by far most of the dust comes from cement plants."

After the report was made public, there were many consultations between borough officials and cement company representatives. And there were also some honest efforts on the part of the cement companies to ease the situation. But the progress wasn't rapid enough to suit the citizens of Northampton, and in 1953 another survey was made. This second report conceded the progress, but indicated that in several instances it was too slow. This second report also underscored the point that "the manufacture of cement is a dust-forming operation and the complete elimination of dirt and dust during the manufacturing process is virtually



By JOSEPH N. BELL

impossible; consequently the control of dust requires a great deal of equipment, time and expense." The report concluded by suggesting that the companies involved and the borough get together to work out a common solution before any legal steps were necessary.

This procedure didn't prove to be entirely satisfactory, and the ordinances were passed. In the opinion of most of the people to whom I talked, they are not particularly good ordinances technically. They are vaguely worded, set up hazy standards and would probably be difficult to enforce. But they now stand as local law—and much more important than their wording is the implicit warning that a new sociological climate has come about, demanding a new approach by industry.

Shortly after the ordinances were passed, Northampton and Nazareth jointly formed the Lehigh Valley Air Pollution Control, thereby serving notice that this is to be a permanent vigilante operation. They also hired an engineer named R. Emmet Doherty as director of the Air Pollution Control. Mr. Doherty is a highly competent technician who has been associated with air pollution work since 1942, the last few years as a consultant in the field. He set up shop with a small laboratory and an infinite amount of zeal in the Northampton Municipal Building and has been holding forth there ever since. Mr. Doherty is intelligent and lucid. He has taken the air pollution story to any group that would listen.

One cement company executive told me: "Doherty has always been eminently reasonable with us. We certainly have no complaint in our dealings with him."

Of his own work, Doherty says: "I'm firmly convinced of two things: we need the cement industry with all its economic influence, and we need clean air. There must be close cooperation between scientists, engineers, the public and industry so air pollutants can be reduced to acceptable level. We

don't expect the cement companies to spend money this month or next. What we expect is progress."

**The Lehigh Valley Air Pollution Control** is an expensive burden—about \$10,000 per year—for the taxpayers of Northampton and Nazareth. They have been working industriously over the past months to entice some other towns to share both the costs and the benefits of the Control. Just recently Stockertown enacted an air pollution control ordinance which becomes effective July 1. The Board of Directors of Whitehall Township have also passed a resolution to adopt a clean air law and have budgeted \$5,000 toward its study and enforcement. But so far no others have accepted. However, indications are that a number—including Bath, Pen Argyl, Catasauqua, Martin's Creek and others—are more than passably interested.

A cement company president told me: "So far only the three boroughs have passed an anti-pollution ordinance and joined the Air Pollution Control. Now both first and second class townships in the Lehigh Valley are considering similar action. I have little doubt that almost all of them will be on the bandwagon before the end of 1959."

All this activity—which would hardly seem revolutionary in other parts of the country—has shaken the cement industry in the East rather considerably. The companies have reacted in widely divergent ways. The overwhelming majority have made an honest effort to reduce the dust nuisance as much as possible within reasonable economic limits. But not all of these companies have kept the public posted or made a concerted effort to explain their problems to the public. There has been, though, some highly enlightened and constructive work on the part of a number of cement companies to remedy the situation as far as it is economically feasible.

One cement company president told me: "Dust control can't be considered primarily as a matter of economics; it's pure public relations. Dust control is an additional heavy cost to cement com-

## Ten point program for handling

1. Determine by sampling and study whether a pollution problem exists, working closely with the local pollution control agency
2. If you have a problem recognize it, for pollution cannot be easily concealed
3. Begin control studies through stack and air sampling
4. Begin a public relations program to advise the community that such work is underway in your plant
5. Begin research on methods of control through pilot studies

### Air pollution

*continued . . .*

panies on behalf of the public. Even so, it boils down to a matter of moral integrity. We have an obligation to our neighbors to collect as much dust as we possibly can and still stay in business."

Another cement company official told me: "We're putting the best dust control equipment we can find on our new installations—and we'll continue to do so. But a few years back, when other installations were put in, the social climate was entirely different. Dust wasn't any great issue, and the equipment to control it wasn't as effective. So we put on control equipment that by today's standards is far from the best. We wish now this weren't the case. But we have to live with it and do the best we can to make it satisfactory. This isn't an easy job—nor is it an inexpensive one."

A third cement company representative of a Lehigh Valley company pointed out an auxiliary benefit of dust collection equipment: "We feel strongly," he said, "that there is a tremendous advantage to both the workers and the company in having a clean plant. The men work more efficiently and are better equipped psychologically to do the job right."

None of the cement company people with whom I talked showed any inclination to ignore or dismiss the dust collection problem. The house magazine of one of the companies involved said recently: "Cement dust is admittedly a nuisance and we are continuing our effort of many years to help abate this nuisance; we believe that encouraging progress is being made."

This is not a simple problem. In some instances,

it is a matter of economic life or death to the company—particularly where antiquated equipment is involved. Almost every cement company is installing effective dust collection equipment on its new installations. And many are striving desperately to bring old equipment into line with new ideas on community cleanliness. But it's a tough and expensive job.

One company, for example, installed mechanical separators some years ago on two kilns. These aren't performing efficiently enough to satisfy their neighbors. It will cost about \$1.5 million to do the job right, and they definitely plan to do it. But it's an absolute economic necessity that they plan the improvements over a period of years, and they are making every effort to explain this to the citizens of their plant community. Their frankness and obvious good intentions have so far been accepted and will continue to be as long as they follow up good intentions with good acts—and let their neighbors know about it.

Doherty has emphasized this point: "We don't," he says, "expect miracles on old equipment. But we do expect the companies to do everything they reasonably can to improve the situation."

The problem of air pollution is not unique to the cement industry. Many other industries have had to face up to it. Some of their experiences can help guide cement manufacturers through their current problems. The story of two steel companies in a midwestern industrial community illustrates the problem clearly.

Both of these companies were pouring destructive smoke over the community in which they were

## air pollution problems

6. Apply results of research to engineering development of control facilities
7. Install tested and proven control equipment
8. Keep the plant neighbors informed of progress
9. Invite the public to inspect the accomplishment
10. Inform companion industries of techniques that may be helpful to them

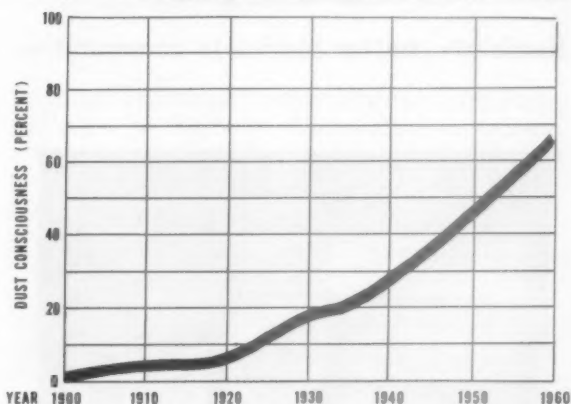
located, and both got in trouble with local authorities because of it. But one of the companies took effective action. Its management talked the problem over in detail with local officials, considered carefully what they might do, then bought advertisements in the local newspaper saying, in effect: "We fully recognize the problem and will do everything in our power to solve it—even though the solution is going to be terribly expensive. We haven't the money to do the whole job now, but we'll handle it one stack at a time until we've converted every stack. We are budgeting our money accordingly and will keep you informed on progress."

And they did. Each time a stack was converted, the public was told about it. This company enjoyed merited good feeling in the community and had excellent cooperation throughout its program. The other company didn't apply this method, and consequently failed to gain community goodwill.

This experience certainly applies to any company in any community. And it emphasizes that the day is past when pollution can be ignored.

In a recent issue of *Chemical Processing Magazine*, William R. Bradley, Chief of the Industrial Hygiene Section of the American Cyanamid Corporation set forth a 10-point program for handling air-pollution problems. Although his article was intended for chemical manufacturers, his points apply equally well to the rock products industries, and because we think they are worth your consideration we have reprinted them above.

People are becoming more conscious of air pollution



The Bethlehem, Pa., newspaper recently commented editorially: "Industry throughout the nation will watch the experiment in the Lehigh Valley. All plagued with air pollution problems hope it works. So do we."

The corollary seems rather plain. If it doesn't work, then state or federal agencies are likely to step into the picture (they already have in Oregon and New York).

"We know," one cement company official told me, "that we haven't made enough effort to tell our story to the public. And now, we're paying the price."

By prompt and enlightened action, it can be hoped that the price will never become too heavy to bear.

END

In the cement industry . . .

# A new era begins

Rising costs have pushed the cement industry into a new phase—an era of bigger units, more automation, greater flexibility, better service to communities



**We've been told** that few producers are buying mills of less than 1,000 hp. and the trend seems to be pointing toward 1,500 and 2,000-hp. mills

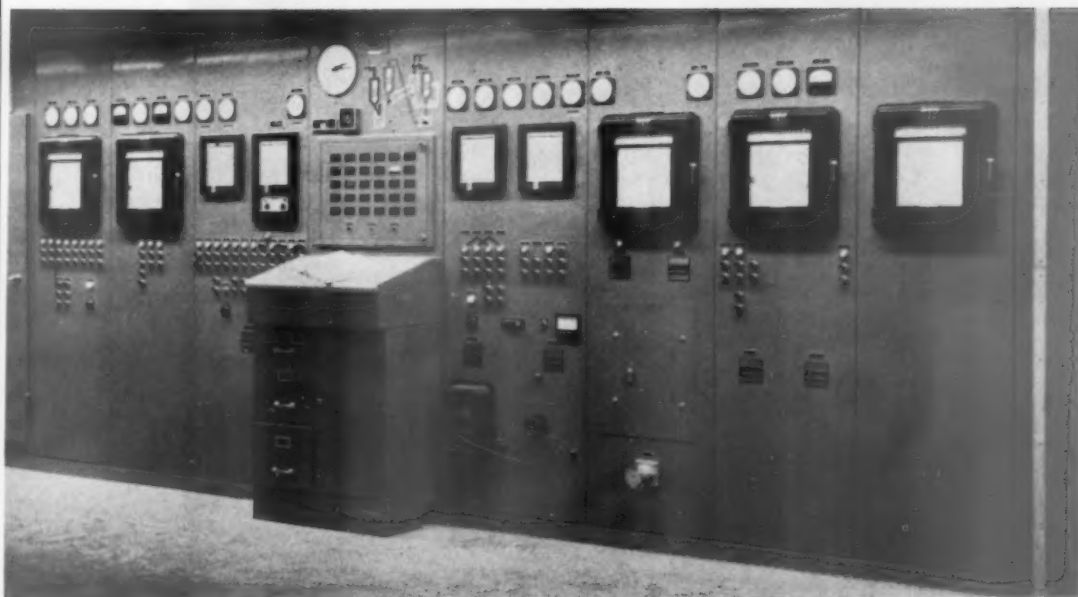
**T**HERE'S NO DOUBT ABOUT IT! The cement industry has revitalized itself during the past few years in setting forth two major goals to reach in present and future industry-expansion programs. These are (1) manufacture of a higher quality product and (2) production with maximum efficiency.

Some have compared this new era in the cement industry to that experienced by other industries in the past—when they were forced to reach deep into their idea file to find the answer to an ever-narrowing cost-price ratio. There have been many moves in many directions by cement-company managements in working out solutions to the problem. In fact, the industry has shown a tremendous amount of ingenuity on its own in getting the job done. Equipment manufacturers have done much to help, to be sure.

One of the most important reasons—if not the most important—for the shift in industry thinking more toward efficiency is the rise in labor rates to the point where making a profit becomes harder and harder. Depreciation rates, freight rates, zoning, community relations and a hatful of other problems seem to converge on the industry at the same time to amplify the seriousness of the situation.

The most practical and sensible answer to these problems, as the industry has learned, is the same answer that other industries developed when they faced similar situations in the past. There must be an increase in the productivity rate while, at the same time, improving product quality. And right





With control boards like this, cement plants are getting to be almost complete push-button operations

now, the cement industry is shooting for those two goals with everything it has.

It has been said that the best way to learn is by example. That is what we have done in attempting to determine for ourselves how this shift in the industry came about. Elsewhere in this issue is a group of 10 case-history studies, or "thumb-nail" sketches of brand new plants that went into operation during the 1956-1957 period—a record period for the industry in total new-plant construction. Actually, 16 new plants went into operation during that two-year period. Twelve plants were installed in 11 U. S. states from California to Pennsylvania and from Michigan to Texas. Four new plants went into three Canadian Provinces at the same time. Our study is based on information available from the 10 plants, plus most helpful information from manufacturers of equipment.

Location of the 10 plants covered by our case histories represents six states and three Canadian Provinces. Six of the plants installed one kiln; the other four had two each. Length of kiln varied from 160 ft. to 450 ft. Six out of the 10 plants had kilns 400 ft. or longer in length. Eight of the plants used the wet process, one was a dry plant and one used the modified dry-pelletizing process.

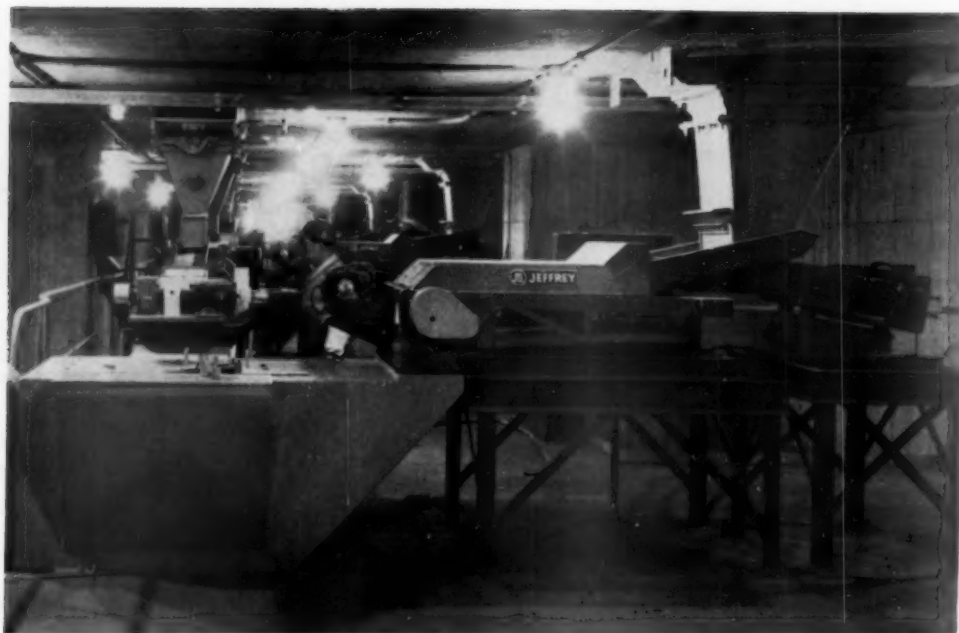
The study showed that several methods were used in gaining the new goals set by the industry. In most cases intensified market and economic surveys were made prior to plant installation. In every case, individual preferences based either on thorough surveys and/or years of operating experience were evident. In one known case—and

there are undoubtedly many others—much study was given to the ratio of total plant investment per annual barrel of plant output to projected sales price per barrel. In other words, cement manufacturers were asking themselves: "Is the required investment worth the risk?"

**Flexibility in materials handling.** This is one of the methods used by plant operators to gain more efficiency, as shown by the survey. In most of the 10 plants studied, haulage trucks were used in the quarry and conveyors were used to deliver crushed material to plant supply storage, where quarrying was done. Crushers are located in or near the quarry, for the most part. Two of the plants used oyster shells as raw material, and no crushing equipment was installed. However, at both of those plants, conveyors were used to the utmost.

Two main ideas in materials handling come to the fore from the plant study. One is a desire to reduce as much as possible the man-hours required in handling raw materials, at the same time providing maximum flexibility in routing and processing materials. Another is providing a more uniform feed to the grinding mills.

**Use of larger equipment.** This factor showed itself time and again in the plant study as a method used to gain more efficiency in operation. At one plant it was the basic premise on which quarry and plant were designed. In addition to bigness alone, the idea is to operate the big equipment at maximum efficiency.



Here is another trend—the move toward greater precision in feeding raw materials. This system lends itself to remote and automatic control

## A new era begins

*continued . . .*



Huge equipment, like this dragline with its 200-ft. boom, is beginning to dominate the field

It's a proven fact that it takes no more man-hours to operate a higher-capacity unit than a small one, so that an increase in output per unit of labor is the result. As one manufacturer put it: "... this means that the unit cost of the cement produced is reduced in proportion to the increased capacity of the unit."

We are told that producers are buying few mills using less than 1,000 hp. Rather, some mills requiring 2,000 hp. are in use and at least one equipment manufacturer has inquiries on his desk for

both 1,500 and 2,000-hp. mills right now. This is a far cry from a situation not too many years ago when 1,000-hp. mills were scarce and regarded with distrust by some who feared to put too many of their eggs in one basket.

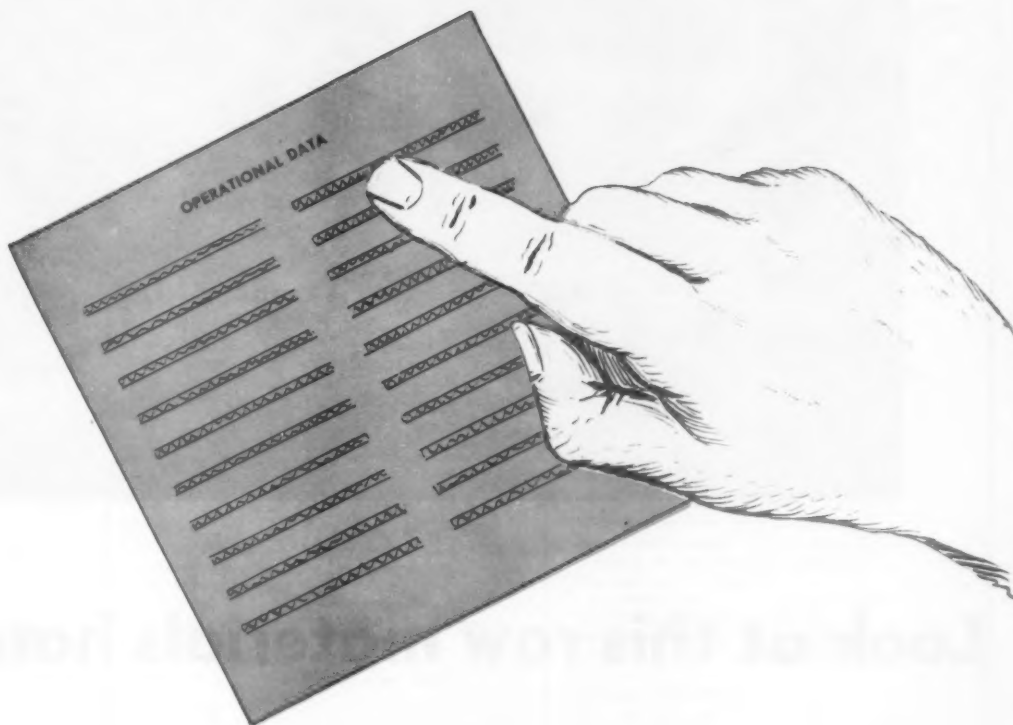
Apparently, the same new-type thinking holds true for burning units. Of the plants studied, the majority had kilns with rated daily capacity of 3,500 bbl. or more of clinker. The range was from 1,500 to 5,700, however.

The trend is definitely toward larger size of kilns. One manufacturer tells us that "the largest operating rotary kiln on the North American Continent is 12 x 500-ft. Current thinking is to larger units. We . . . know of one company thinking of a 13½ x 500-ft. dry-process kiln." More than that, there appears to be interest in a wet process, single, rotary kiln that would have a capacity of 8,400 bbl. per day. According to one manufacturer, such output would require a kiln 16 to 17 ft. in diam. and 550 ft. long.

Another manufacturer stated that a number of newer plants have been dry-process plants that, a few years ago, would have used the wet process. The reasons: high fuel costs, better blending systems for dry materials and more efficient dust-collecting equipment. If that is true—and it may be—it did not show in the plant survey. Eight of the 10 plants covered used the wet process.

**Better dust collection.** Judging from the 10

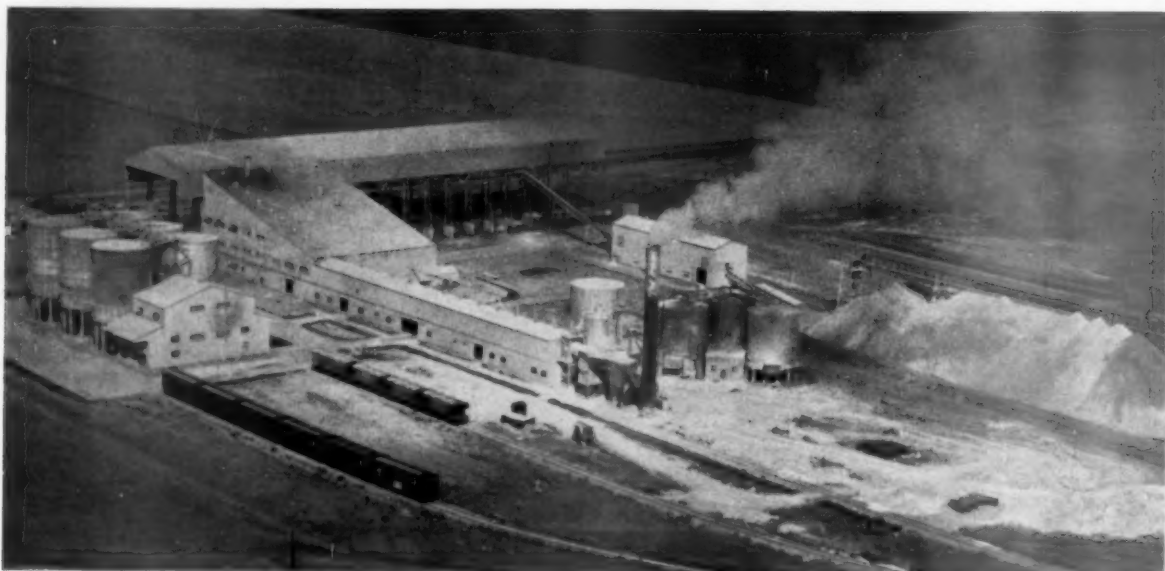
*Please turn to page 166*



## Case history study of ten new cement plants

Cement industry expansion during the 1956-1957 period was the biggest of any similar period in industry history. Of the 16 brand new plants placed in operation during those two years, the following pages give information and data on ten. Data are presented in "case history" style, to provide only a thumbnail sketch of each new plant so that each operation may be compared with others with maximum ease. The editors hope that this compact presentation of information on newly constructed plants—all in one issue—will be of interest and value to the cement industry.

## CEMENT PLANT No. 1



## Look at this raw materials handling

**A**N ELABORATE RAW-MATERIALS handling system is featured at this central Canada plant, which produces 3,000 bbl. of cement per day. The raw and finish grinding sections are equipped with complete air-separation and dust-collection equipment installed in a closed circuit. Six aerated cement-storage silos give sufficient storage area for finished cement. They supply two bagging plants. Seventy-two percent of total output is bagged.

The company produces its own limestone, clay and sand. A diesel shovel in the quarry loads 15-ton diesel trucks that deliver quarry product to a primary 36x48-in. jaw crusher, rated at 250-tph. The average length of round-trip truck haul is  $\frac{1}{2}$  mile, and each truck averages 40 round trips per day. Minus 5-in. stone is stockpiled over a reclaim tunnel fitted with a portable feeder. The tunnel belt conveyor delivers crushed stone to railroad cars for delivery to the main rock storage at the plant, which is over a reclaim tunnel with four outlets. After secondary crushing to minus  $\frac{5}{8}$ -in. size, stone is delivered to the raw grinding mills.

Raw clay is delivered to the plant site by truck, then is crushed and fed to a rotary dryer. Dry

processed clay is then stored in a covered building along with the limestone, iron ore and silica. The latter two are shipped in by railroad. Each type of raw material then is fed by belt conveyor to separate bins ahead of the raw grinding section.

Weigh-type feeders deliver each material in proper proportion to a pair of elevating conveyors that discharge to an air separator. The latter feeds the single-compartment  $11\frac{1}{2}$  x 17-ft. ball mill, which has a capacity of 55 tph. Mill product, 92 percent through 200 mesh, then is pumped to three 600-ton raw mix blending silos.

Feed to the 11 x 375-ft. rotary dry kiln is from these silos through an airlift constant-head feeder. The kiln is fired by gas. Average output is 3,000 bbl. of clinker per day, using an average of 925,000 Btu. of fuel per barrel of clinker. The kiln is equipped with a closed-type cyclone dust-collection system. Collected dust is returned to the constant-head feeder ahead of the kiln. Clinker is processed through a 6 x 33-ft. inclined-grate type cooler. Clinker is crushed and sent by clinker conveyor and elevating conveyor to storage.

An overhead crane delivers clinker to a storage bin ahead of the finish grinding section. There is



## OPERATIONAL DATA

<b>General</b>		<b>Raw grinding cont.</b>	
Plant location	— Saskatchewan, Canada	Proportioning feeders	— belt type
Plant capacity (bbl./yr.)	— 1,000,000	Size of mill product	— 92 percent through 200-mesh
Type of plant	— dry	Product handling	— 80-tph. pump moves to three 600-ton storage bins; 70-tph. pump moves to kiln
Raw material procurement	— produce limestone, clay and sand; purchase iron, gypsum		
Daily consumption, raw materials (tons)	— 858		
<b>Quarrying</b>		<b>Burning</b>	
Type drills	— wagon, 3-in. holes	No. and size of kilns	— one 11 x 375 ft., 75-rphr.
Explosives	— 40—, 60-percent dynamite	Kiln fed by	— airlift and screw
Pounds explosive per cu. yd.	— 0.945	Daily kiln output (bbl. clinker)	— 3,000
Footage drilled per shift	— 280	Fuel used	— gas
Loading unit	— 2½-cu. yd. diesel shovel	Fuel used per bbl. clinker	— 925,000 Btu.
		Dust collecting	— mechanical
		Clinker cooler	— 6 x 33-ft. inclined grate
<b>Haulage</b>		<b>Finish grinding</b>	
Haulage units	— 15-ton diesel trucks	No. and type of mills	— one single-comp. ball mill
Avg. length of haul, round trip	— ½ mile	Size of mill	— 11½ x 17 ft.
Avg. no. round trips per truck per shift	— 40	Speed of rotation, rpm.	— 17.5
Conveyor units	— two 36-in., total length 1,100 ft.	Capacity, tph.	— 32
Conveyor service	— from primary crusher to stockpile	Size of mill product	— 2,950 Blaine
		Gypsum added	— four percent
<b>Crushing</b>		<b>Storage and packing</b>	
Primary crusher	— 36 x 48-in. jaw, 250-tph	No., type of storage units	— six steel silos
Location of crusher	— quarry	Capacity of each, bbl.	— 12,000
Size crusher product (primary)	— minus 5-in.	No. and type of bagging machines	— two 4-spout
Secondary crusher	— 24 x 36-in. impactor, 200-tph.	Percent bagged	— 72
Size crusher product (secondary)	— minus ½ in.	Method of shipping	— 85 percent truck, 15 percent rail
<b>Raw grinding</b>		<b>Crews and productivity</b>	
No. and type of mills	— one single-comp. ball mill	No. men in quarry	— 16
Size of mill	— 11½ x 17 ft.	No. men in plant	— 117
Speed of rotation, rpm.	— 17.5	Tons of limestone per quarry man-hour	— 13
Mill capacity, tph.	— 55	Bbl. of cement per man-hour	— 4.24

## system

also a similar storage bin for gypsum. Each of these products is fed in proper proportions through weigh-type feeders to a single-compartment 11½ x 17-ft. finish-grinding mill. The mill has a capacity of 32 tph. The mill is in a closed circuit with an automatic bag-type dust collector and an air separator. Fines from the dust-collection units are then moved to six steel silos, each of which holds 12,000 bbl. of finished cement.

Cement from the silos is withdrawn and delivered by elevating conveyor to two bagging plants, each of which is equipped with a four-spout bagger. Product may be shipped by rail or truck, 85 percent of total output being shipped by the latter method.

The company quarry employs 16 men; 117 men work the plant. The productivity rate in the quarry is 13 tons of limestone per man-hour. In the plant, the rate is 4.24 bbl. of cement per man-hour.

END

## MAJOR EQUIPMENT REFERENCE

Shovels in quarry, Lorain 85, 2½-cu. yd.	.....	The Thew Shovel Co.
Drilling machines, S. P. wagon-type	.....	Gardner-Denver Co.
Explosives, 40-, 60-percent Dynamex	.....	C.I.L.
Haulage trucks, 15-ton	.....	Euclid Div., General Motors Corp.
Conveyors, 36-in.	.....	Stephens-Adamson Co.
<b>Crushers:</b>		
34 x 36 in.	.....	Hammermills, Inc.
36 x 48 in., jaw	.....	Allis-Chalmers Mfg. Co.
Crusher feeders, 4 x 15-ft., apron-type	.....	Stephens-Adamson Co.
Sizing screens, Ripl-Flo, 5 x 14-ft.	.....	Allis-Chalmers Mfg. Co.
Mill feeders, Feedoweights	.....	Merrick Scale Co.
Grinding mills, single-comp. 11½ x 17-ft.	.....	
Motors for mills, 1,250-hp.	.....	Allis-Chalmers Mfg. Co.
Mill lining	.....	
Conveyors and elevators	.....	Link-Belt Co.
Kiln feeders, airlift	.....	Fuller Co.
Kiln control equipment	.....	Bailey Meter Co.
Kiln, 11 x 375-ft.	.....	
Kiln motor, 125-hp.	.....	Allis-Chalmers Mfg. Co.
Fans, induced draft, double inlet, 145,000-cfm.	.....	B. F. Sturtevant Co.
Kiln lining	.....	A. P. Green Fire Brick Co.
Clinker cooler, 6 x 33-ft. inclined-grate type	.....	Fuller Co.
Dust collectors, mechanical, Multidone	.....	Western Precipitation Corp.
Cement mills, single-comp. 11½ x 17-ft.	.....	
Cement mill motors, 1,250-hp.	.....	Allis-Chalmers Mfg. Co.
Air separators, 16-ft.	.....	Sturtevant Mill Co.
Dust collectors, automatic bag-type	.....	The Northern Blower Co.
Airslides, cement pumps and conveyors	.....	Fuller Co.
Bagging machines	.....	Haver
Bulk trucks, 100-bbl. cap.	.....	Fruehauf Trailer Co.



## Simple, flexible plant features

**R**APID GROWTH IN POPULATION, due in most part to an oil boom in Alberta, Canada, and a keen eye for future business possibilities gave rise to the construction of a new wet-process cement plant in Edmonton in 1956. Started with only one kiln in operation, another has since been added to bring annual capacity to 2,000,000 bbl. per year.

The plant site was chosen, in addition to expanding markets in the area, for closeness to excellent high-calcium limestone and clay deposits and availability of natural gas. The company mines limestone and clay, but buys iron ore and sand which are trucked in from nearby sources.

An important feature of the plant is its simplified plant layout and use of relatively few production units. A covered storage area, which is used for all raw materials, is centrally located. The kilns and slurry basin are on one side of storage hall; blending tanks, mill building on the other.

Raw limestone is crushed in the quarry by a 42-in. 1,200-tph. primary crusher to minus 5-in. size. A secondary crusher at the plant reduces stone to minus 3/4-in. size. This stone is moved to the storage hall through an enclosed 30-in. conveyor. Clay slip and added iron slurry are processed in a 26-ft. wash mill. It is pumped from there to the

blending tanks, or may go to the raw mills if more grinding is required.

Flexibility is a feature of the slurry-blending and handling operation. Eight slurry tanks of two sizes (11,000 and 20,500 cu. ft.) are available; normally, two of the larger tanks are used for blending and two for limestone slurry. Smaller tanks are used for clay, sand or ferrous slurry, or as spares. Tanks are interconnected by piping so that slurry can be moved from any tank to any other. Blended mix is pumped to the kiln feed basin, or it may bypass the basin and be pumped directly to the ferris-wheel type feeder at the kiln. The feed basin is built so that part is underground, and it has a natural clay bottom. The underground portion is built of reinforced concrete, while that above ground is built of concrete block. Capacity of the tank is 70,000 cu. ft.

The kilns are all-welded 11 x 340-ft. units, each of which has a capacity of 3,000 bbl. per day. Speed of kiln rotation is synchronized with the ferris-wheel type feeder, which is fed through a constant head tank. Natural gas is used as fuel; 1,000,000 Btu. are consumed per barrel of clinker produced. Exhaust gases are processed through a set of cyclones and an electrostatic precipitator



## few units

### OPERATIONAL DATA

<b>General</b>		<b>Raw grinding cont.</b>	
Plant location	— Alberta, Canada	Mill capacity, tph.	— 30
Plant capacity, bbl./yr.	— 2,000,000	Proportioning feeders	— belt type
Type of plant	— wet	Size of mill product	— 200 mesh
Raw material procurement	— produce limestone, clay; purchase iron, sand	Product handling	— 4 and 8 in. pumps (200; 1,000 gpm.) moves to 9-slurry-basin setup, then 4 in. 220-gpm. pumps feed to kilns
Daily consumption of limestone, tons	— 1,250		
<b>Quarrying</b>		<b>Burning</b>	
Type drills	— crawler-mounted compressed air, wagon; 1½ in. and 3½ in. hole	No. and size of kilns	— two 11x340 ft., 70 rphr.
Explosives	— 1 and 3 in. dynamite	Kilns fed by	— rotating feeder from constant head tank
Lbs. explosive per cu. yd.	— 0.8	Daily output each kiln (bbl. clinker)	— 3,000
Footage drilled per shift	— 120	Fuel used	— gas
Loading units	— 2½, 3-cu. yd. trucks	Fuel used per bbl. of clinker	— 1,000,000 Btu.
<b>Haulage</b>		Dust collecting	— mechanical, electrostatic
Haulage units	— four 11-cu. yd. trucks	Clinker cooler	— 6 x 30 ft. grate type
Avg. length of haul, round trip	— ½ mile	<b>Finish grinding</b>	
Avg. No. round trips per truck per shift	— 40	No. and type of mills	— three 3-comp. ball mills
Conveyor units	— one 48-in., total length 120 ft.	Size of mills	— 8 x 37 ft.
Conveyor service	— from crusher to rail-road cars	Speed of rotation, rpm.	— 18
<b>Crushing</b>		Capacity, tph.	— 28
Primary crusher	— 42 in., 1,200-tph.	Size of mill product	— 3,000 Blaine
Location of crusher	— quarry	Amount of gypsum added	— 5 percent
Size crusher product (primary)	— minus 5 in.	<b>Storage and packing</b>	
Secondary crusher	— 175-tph.	No. of storage units	— 12 silos
Size crusher product (secondary)	— minus ¾ in.	Capacity of each, bbl.	— 8,000
<b>Raw grinding</b>		No. and type of bagging machines	— 3 four-spout
No. and type of mills	— two 3-comp. ball mills	Percent of product bagged	— 50
Size of mills	— 8 x 37 ft.	Method of shipping	— 50 percent truck, 50 percent rail
Speed of rotation, rpm.	— 18.0	<b>Crews and productivity</b>	
		No information available	

in series. The dust collection system is installed in two parallel circuits, so that one is in use while the other is being maintained. Material removed by the cyclones is returned to the kilns.

Clinker discharges through a 6 x 30-ft. air-quenching grate cooler, which reduces clinker temperature to 140 deg. F. The cooler is equipped with a bar grizzly that has ¾-in. openings, installed at the end of the cooler ahead of a clinker breaker. This obviates the use of a clinker crusher and screens. Elaborate kiln controls are available through a pressurized master kiln-control panel.

Clinker is moved from covered storage to two 8 x 37-ft. finish-grinding mills, each of which is served by automatic-type weighing feeders. Each mill is operated in a closed circuit with a 16-ft. air separator. Capacity of each mill is 28 tph. of product ground to 3,000 Blaine fineness. Finished cement is pumped to the packing house through 6-in. pipe lines into a set of 12 silos. Each silo has capacity for 8,000 bbl.

The packing station is designed for rapid loading of bulk or bagged cement into trucks or rail-

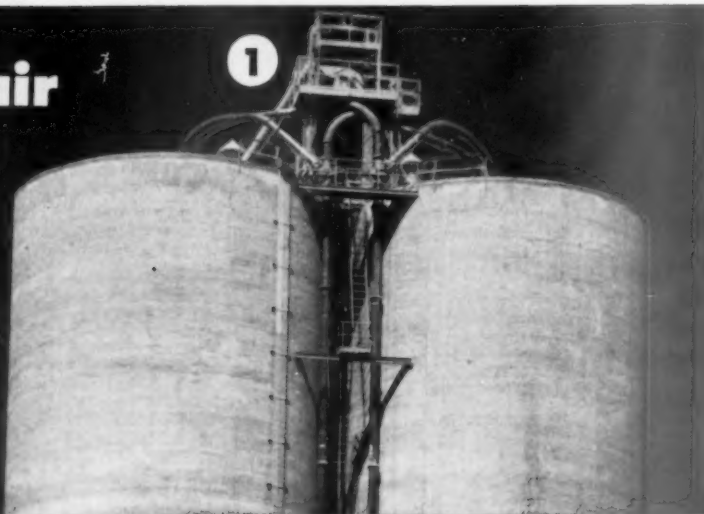
### MAJOR EQUIPMENT REFERENCE

Primary crusher, 1,000-tph.	..... Allis-Chalmers Mfg. Co.
Secondary crusher, 200-tph.	..... Pennsylvania Crusher Co.
Crusher motors, 250, 350-hp.	..... Westinghouse Electric Co.
Mill feeders, Feedweights	..... Merrick Scale Co.
Raw grinding mills, 8 x 37-ft. Compeb	..... Allis-Chalmers Mfg. Co.
Motors for mills, 900-hp.	..... Westinghouse Electric Corp.
Dust collecting equipment	..... W. W. Sly Mfg. Co.
Raw material conveyors and elevators	..... Jeffrey Mfg. Co.
Slurry pumps, 200 and 1,100-gpm.	..... A. R. Wilfley & Sons, Inc.
Slurry basin agitators	..... The Dorr Co.
Kiln feeder, rotary type	..... Allis-Chalmers Mfg. Co.
Kilns, 11 x 340-ft.	.....
Kiln motors, 125-hp.	..... Westinghouse Electric Corp.
Preheater, 6 x 30-ft.	..... Fuller Co.
Kiln lining	..... The A. P. Green Fire Brick Co.
Clinker coolers, air-quenching inclined-grate	..... Fuller Co.
Dust collectors, mechanical and electrostatic	..... Buell Engineering Co.
Cement mills, 8 x 37-ft. Compeb	..... Allis-Chalmers Mfg. Co.
Cement mill motors, 900-hp.	..... Westinghouse Electric Co.
Air separators, 16-ft.	..... Sturtevant Mill Co.
Dust collectors	..... The W. W. Sly Mfg. Co.
Cement pumps, 7-in.	..... Fuller Co.
Cement conveyors and elevators	..... Jeffrey Mfg. Co.
Bagging machines	..... Bates

road cars. Cement from any silo may go to a four-spout bagging machine or to bulk truck or rail loading. About half of the plant output is bagged; total shipment is split between truck and rail haulage.

END

# AAF keeps air DUST-FREE for St. Lawrence Cement



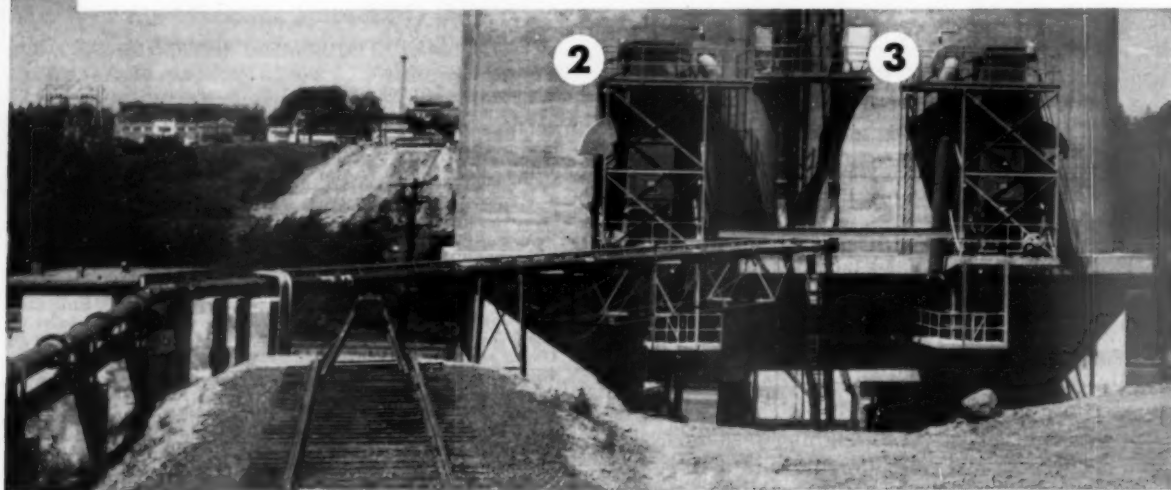
## **AMERjet** COLLECTORS GUARD STORING, LOADING, BAGGING OPERATIONS

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AMERjet No. 1 sits atop the twin silos, snatches up all dust lost in silo-filling operations. AMERjet No. 2 traps all excess dust during bagging operations, and AMERjet No. 3 keeps bulk loading free of dust. And none of the dust is lost! Collected cement from all three units is conveyed back to the silos. Altogether, these dust-hungry AMERjets are

collecting (and saving!) 400 to 500 lbs. of cement per hour that would otherwise settle over the neighborhood.

The AMERjet automatically conditions its own media, permits velocities through the media up to five times higher than is possible with conventional shaker-type fabric collectors. Other AMERjet advantages over conventional units: occupies  $\frac{1}{2}$  the space, reduces installation costs by 50%, and lowers maintenance costs by 45%. Ask your local AAF representative for AMERjet Bulletin No. 279 or write direct.



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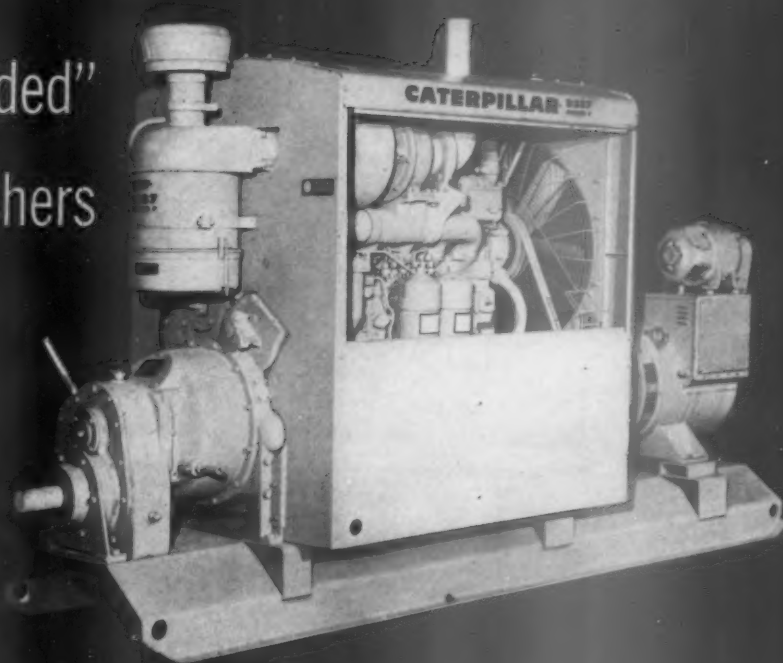
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ROCK PRODUCTS, May, 1958

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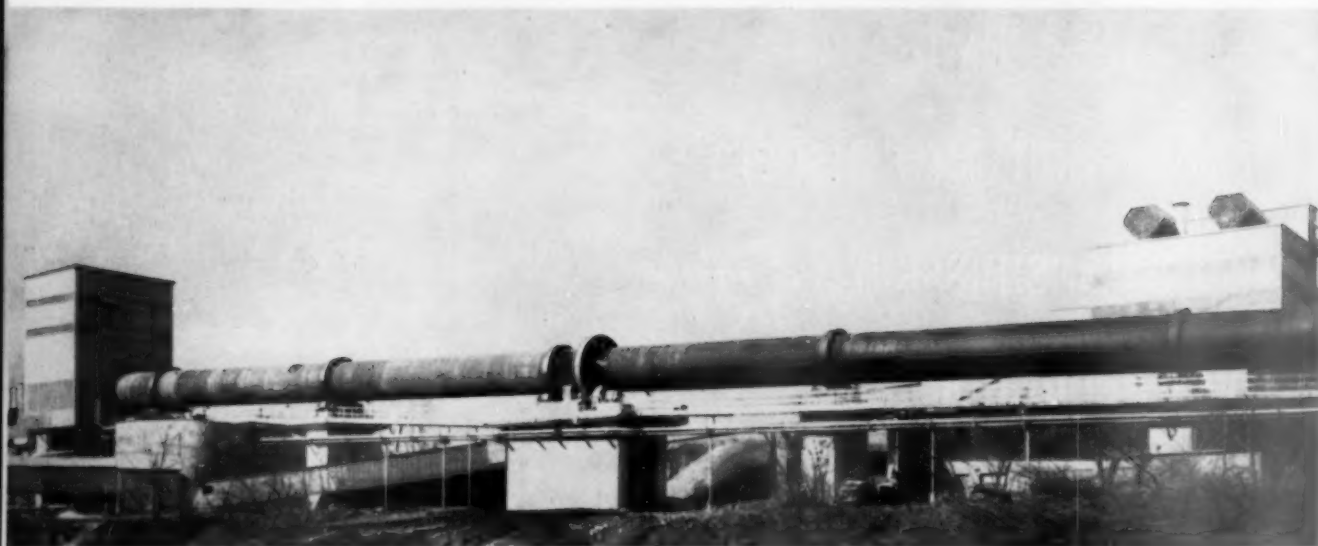
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# Huge 450 ft. kiln really boosts

**A**N INCREASING DEMAND for cement in the area serviced by a western Pennsylvania plant was basic in the decision to build a new plant next to one that had operated for 36 years. After thorough investigation of existing facilities, it was decided that the best way to get the increased production necessary to satisfy growing demand was to supply new facilities. These consist of a new 12 x 450-ft. kiln and processing equipment from raw grinding through bulk storage. Annual output of the new plant—1,350,000 bbl.—nearly doubled the total capacity of the old plant, which operates three wet-process kilns.

Only minor changes were made in the quarry setup and the haulage and crushing facilities used by the old plant to supply raw material to the new plant. Virtually all that was necessary was an increase of quarry output and the addition of conveyors to move the raw limestone to the new plant. Daily consumption of raw materials by the new plant is 1,200 tons.

At present, stripping of 40 ft. of overburden is necessary in the quarry to reach a 21 ft. thick vein of Vanport limestone. Stripping is done with a walking dragline that moves an average of 8,000 cu. yd. of material daily. After being blasted from

the face, limestone is loaded by 5-cu. yd. shovels into trucks for delivery to the crushing station.

After passing through a primary crusher, rock is screened. Plus 5½-in. size is fed to a secondary crusher and rescreened. Stone that is too small to be used in blast furnaces is reduced in a hammermill for use in the cement plants.

Limestone and shale go to separate bins in the new structure, and proportioning feeders discharge both materials to a conveyor that feeds a two-comp. 10 x 35-ft. ball mill. Feeders, adjustable through vari-speed drive, are set to the desired mix and are controlled as a group. The mill is rotated at 18.1 rpm. Capacity is 4,800 bbl. per day. Size of mill product is 85 percent through 200 mesh.

Ground raw material in slurry moves through 4-in. pumps to two 4,000-bbl. slurry basins. From there, 4-in. 200-bbl./hr. pumps move slurry to the new kiln. The new rotary unit—a 12x450-ft. unit—was one of the longest of its type when installed. Slurry enters the kiln through a ferris-wheel type feeder. Coal is used as fuel, and an estimated 1,000,000 Btu. are consumed per bbl. of clinker produced. Rated output of the kiln is 4,000 bbl. daily. Clinker is cooled in an air-quenching 7 x 44-ft. inclined grate clinker cooler.

## OPERATIONAL DATA

<b>General</b>		<b>Burning</b>	
Plant location	— Pennsylvania	No. and size of kilns	— one 12 x 450 ft., 60-rphr.
Plant capacity, bbl./yr.	— 1,350,000	Kiln fed by	— ferris-wheel type feeder
Type of plant	— wet	Daily output of kiln (bbl. clinker)	— 4,000
Raw material procurement	— produce limestone, shale	Fuel used	— coal
Daily consumption, raw materials, ton	— 1,200	Fuel used per bbl. clinker	— 1,000,000 Btu.
<b>Quarrying</b>		Dust collecting equipment	— mechanical
No information available; quarry supplies both new and old plants		Clinker cooler	— 7 x 44 ft. inclined grate
<b>Haulage</b>		<b>Finish grinding</b>	
No information available; same for new and old plants		No. and type of mills	— one 2-comp. ball mill
<b>Crushing</b>		Size of mills	— 10 x 31 ft.
No information available; facilities serve both new and old plants		Speed of rotation, rpm.	— 18.1
<b>Raw grinding</b>		Capacity, bbl./day	— 4,800
No. and type of mills	— one 2-comp. ball mill	Size of mill product	— 98 percent through 200 mesh
Size of mills	— 10 x 35 ft.	Amount of gypsum added	— 3.8 percent
Speed of rotation, rpm.	— 18.1	<b>Storage and packing</b>	
Mill capacity, bbl./day	— 4,800	No. of storage units	— 9 silos
Proportioning feeders	— belt type	Capacity of each, bbl.	— 16,000 and 18,000
Size of mill product	— 85 percent through 200 mesh	No. and type of bagging machines	— none
<b>Product handling</b>		Method of shipping	— 90 percent truck, 10 percent rail
4-in. pumps move to two 4,000-bbl. slurry basins, then 4-in. 200-bbl./hr. pumps feed kiln		<b>Crews and productivity</b>	
		No information available	

## production

Cooled clinker is conveyed to a two-comp. 10 x 31-ft. ball mill for final grinding. Speed of rotation of the mill is 18.1 rpm. Capacity of the mill is 4,800 bbl./day of cement; product size is 98 percent through 200 mesh. The mill is operated in a closed circuit with an air separator to obtain uniform fineness of the cement. In finish grinding, an average of 3.8 percent of gypsum is added.

The new plant uses nine silos with capacities of either 16,000 or 18,000 bbl. for storage. Only bulk cement is loaded at the new plant. It is loaded by gravity directly from the new silos to trucks and railroad cars. Both trucks and cars are weighed before and after loading. Of the total amount shipped, 90 percent is shipped by truck, the remainder by rail.

Qualified chemists and technicians test raw materials and finished cement hourly "round the clock." Daily tests are made on the clinker, the fuel and the composite of the 24 hourly cement samples.

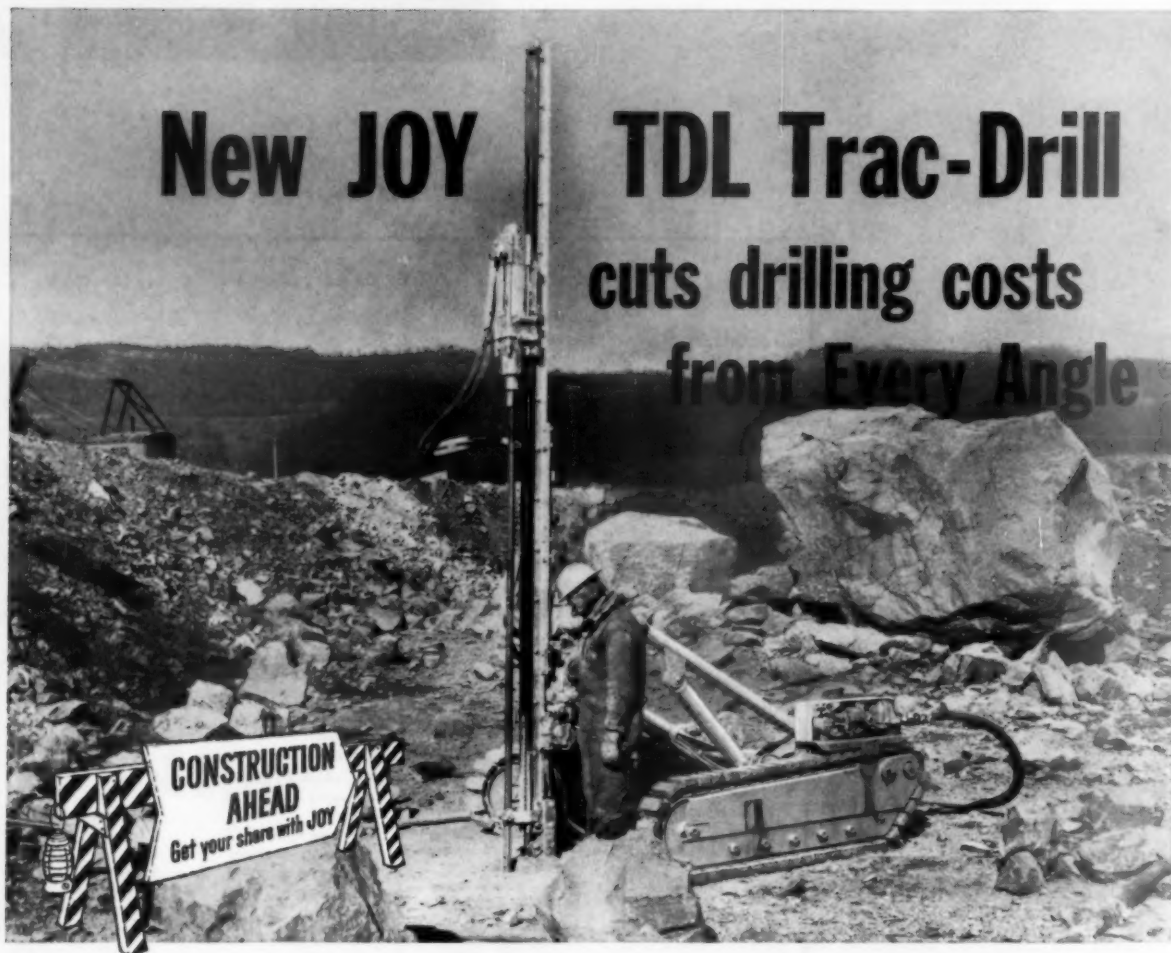
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## MAJOR EQUIPMENT REFERENCE

Plant design and engineering	MacDonald Engineering Co. W. R. Bendy Engineers
Mill feeders, Feedweights	Merrick Scale Co.
Grinding mills, 2-comp. Compeb	Allis-Chalmers Mfg. Co.
Grinding balls	U. S. Steel Co.
Mill motors	Allis-Chalmers Mfg. Co.
Slurry pumps, 4-in.	A. R. Wilfey & Sons, Inc.
Slurry basin agitators	The Dorr Co.
Kiln feeders, ferris-wheel type	Traylor Engineering & Mfg. Co.
Kiln, 12 x 450-ft.	F. L. Smith & Co.
Kiln motor, 200-hp.	Allis-Chalmers Mfg. Co.
Kiln lining	General Refractories Co.
Clinker cooler, 7 x 44-ft., inclined grate	Fuller Co.
Dust collectors, mechanical, type 24	
Multiclone	Western Precipitation Corp.
Coal mill, Raymond 533A	Combustion Engineering Corp.
Cement mill, 10 x 31-ft. 2-comp. Compeb	Allis-Chalmers Mfg. Co.
Cement mill motor, 1,500-hp. synchronous	
Air separators, 16-ft.	Sturtevant Mill Co.
Dust collectors,	
Type LR	Buell Engineering Co.
Dynaclone	The W. W. Sly Mfg. Co.
Airslides, Fuller-Huron	
Cement pumps, Fuller-Kinyon	Fuller Co.

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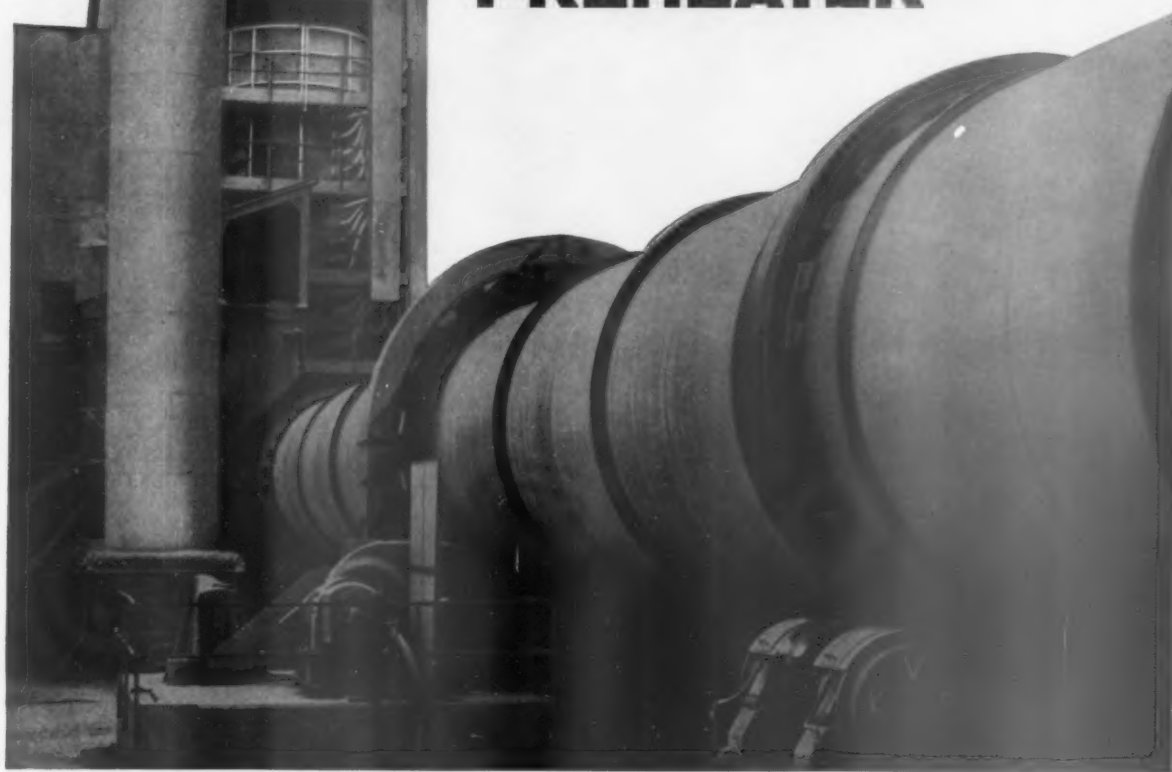
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...an. I. C. E. E. C. H. O. L. I. C. president, said the increase {in cement price} would not cover the 35-cents-a-barrel rise in costs that resulted from higher fuel oil prices. Cement prices usually are revised at the

(New York Times, December 15, 1957)

with the

## **KENNEDY GRUDEX PREHEATER**



On dry process cement kilns, the KENNEDY Grudex Preheater can reduce fuel consumption by as much as 40%!

*The KENNEDY Grudex Preheater is manufactured exclusively by KENNEDY-VAN SAUN*

### **CONSIDER THESE ADDITIONAL ADVANTAGES**

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- Requires no elaborate supporting structure.
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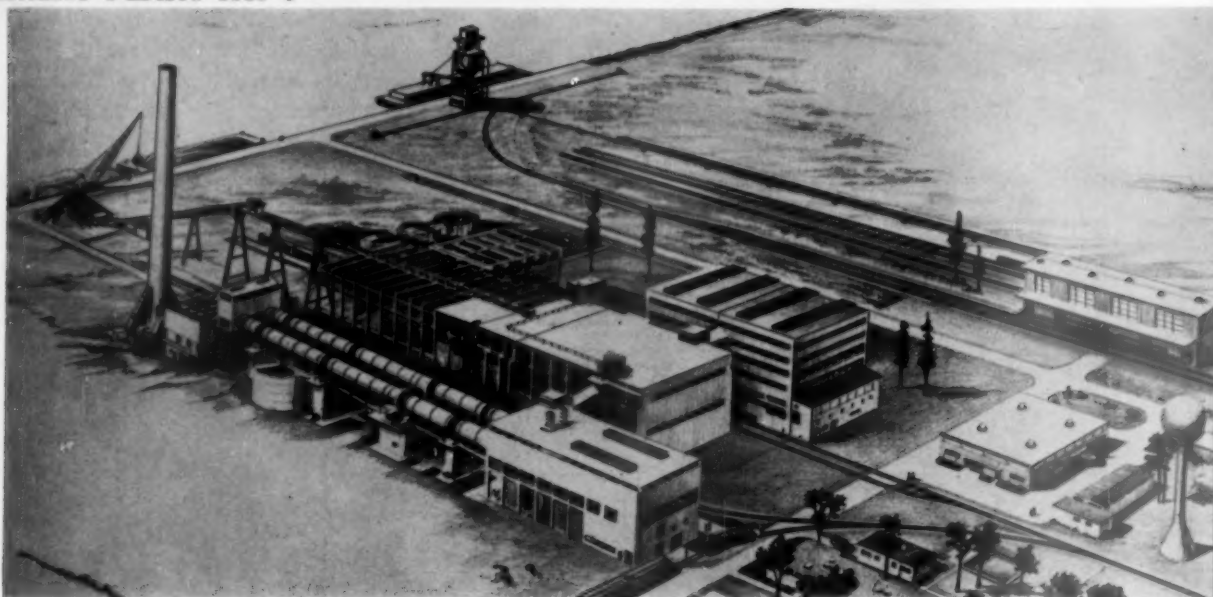
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ROCK PRODUCTS, May, 1958

97

## CEMENT PLANT No. 4



## Here, future expansion plans were

**A**S IS THE CASE with most plants installed during the 1956-1957 period, a growing demand for cement in the areas serviced, or to be serviced, by a new plant is the major factor in a decision to build. This was true of a new Louisiana plant completed in July, 1957. In addition, when building this new plant the company gave itself plenty of room for future expansion by designing it for operation of six kilns—only two are installed and working now. Area served by the new plant is booming with new oil refineries, basic chemical plants and other industrial growth. Expansion room at the plant will be needed as construction—including highway and other nonhighway building—mounts in the years ahead.

The design of the new plant reflects foresight of management in readying itself for increasing cement demands. Although only two kilns have been installed, the new plant as it stands has sufficient storage areas, grinding mills, slurry tanks and clinker grinding mills to handle the expected output of the present two and projected four kilns. Only new storage silos for finished cement will be needed in future expansion.

The two-kiln plant uses the wet process, and capacity is rated at 2,000,000 bbl. per year. Concrete or concrete products were used in construction of each building at the new plant. These buildings are good examples of strength, flexibility and

utility of portland cement in an industrial plant.

Raw materials used in cement making at this plant include oyster shells and clay. The former are purchased, but clay is mined near the plant site. An average of 1,800 tons of raw materials are consumed daily.

Shells are brought to the plant by barges and are unloaded into a hopper by an electric crane. Transportation to the main storage area under an overhead crane is by belt conveyor. Raw clay is delivered to the plant by railroad cars, is unloaded into a pug mill and clay slip is further processed over a vibrating screen and through two batteries of 20-in. liquid cyclones. The latter remove excess sand and other debris. Clay slip then goes to a holding tank, from which it is pumped to a ball-mill feeder to join the shells.

Three 3-comp. center-discharge mills are used for raw grinding. Each is a 9 x 32-ft. unit and has capacity for 140 bbl. per hour. Material from the first compartment is removed and screened. Oversize goes back into the first compartment and the through product goes into the finish compartment. Finished slurry is pumped to one of the holding tanks for adjusting and blending, then to one of two kiln feed basins.

The plant is equipped with two 11 $\frac{1}{4}$  x 400-ft. rotary kilns that are fed by ferris-wheel type feeders from a continuously circulating flow of

## OPERATIONAL DATA

## General

Plant location	— Louisiana
Plant capacity, bbl./yr.	— 2,000,000
Type of plant	— wet
Raw materials procurement	— produce clay; purchase shells, iron
Daily consumption of raw materials, tons	— 1,800

## Quarrying

No quarrying done

## Haulage

Method of shell shipment	— 3,000-cu. yd. barges
Method of unloading	— electric crane
Conveyor units	— 30 in., self-feeding; 42-in. distributing
Conveyor service	— from feed hopper to distributing belt over storage area

## Crushing

No preliminary crushing necessary

## Raw grinding

No. and type of mills	— three 3-comp. center-discharge ball mills
Size of mills	— 9 x 32 ft.
Mill capacity, bbl./hr.	— 140
Proportioning feeders	— rotary for clay, belt-type for shell
Size of mill product	— 87 percent through 200 mesh
Product handling	— 5 and 8 in. (500, 1500-gpm.) pumps move to 6 blending or slurry basins, each with 2,100-bbl. cap., then 5 in. 500-gpm. pumps feed to two kiln feed basins

## Burning

No. and size of kilns	— two 11 ft. 3 in. x 400 ft., 60-75 rphr.
Kilns fed by	— ferris-wheel type feeder
Daily output, each kiln (bbl. clinker)	— 3,500
Fuel used	— gas
Dust collecting equipment	— electrostatic
Clinker coolers	— two inclined-grate type

## Finish grinding

No. and type of mills	— three 2-comp. ball mills
Size of mills	— 9 x 30 ft.
Capacity, bbl./hr.	— 180
Size of mill product	— 94 percent through 200 mesh
Amount of gypsum added	— 4.5 percent

## Storage and packing

No. of storage units	— 20 silos
Capacity of each, bbl.	— 8,000
No. and type of bagging machines	— four 4-spout
Percent of product bagged	— not available
Method of shipping	— rail, water and truck

## Crews and productivity

No information available



# built in

slurry. Kilns are gas fired and consume 4 million cu. ft. of gas every 24 hours. Rated capacity of each kiln is 3,500 bbl. of clinker per day. Kiln gases are processed through electrostatic precipitators that remove dust from the stack discharge.

Hot clinker drops to a 7 x 44-ft. inclined grate cooler, through a clinker breaker into a chain drag conveyor and thence by elevating bucket conveyor to storage. A covered clinker storage area has capacity for 20,000 tons of raw clinker.

An overhead crane supplies cement-making material to a four-compartment bin; two compartments are for clinker, one for gypsum and one for calcined shell used to make masonry cement. They are collected as desired by a drag conveyor and sent to surge hoppers above each finish-grinding mill.

Three ball mills, 9 x 30-ft. in size, are used for finish grinding. Each has capacity of 180 bbl. per hour. Each mill operates in closed circuit with a 16-ft. air separator.

Finished cement is pumped to storage that consists of 20 silos with capacity of 8,000 bbl. each, installed as two groups. Bulk cement from one group may be loaded into rail or barge shipping facilities; that from the other may be loaded into railroad cars or sent to a packing plant.

END

## MAJOR EQUIPMENT REFERENCE

Shovels	
1055LC, 4-cu. yd.	Harnischfeger Corp.
955ALC, 2-cu. yd.	
Mill feeders, 5-ft.	Hardinge Co., Inc.
Grinding mills, 9 x 32-ft.	Allis-Chalmers Mfg. Co.
Motors for mills, 1,000-hp.	General Electric Co.
Raw material conveyors, 18-in. drag	Kensington Steel Co.
Raw material elevators, 3 x 5-ft.	Chain Belt Co.
Slurry pumps, 5-in.	A. R. Wilfley & Sons, Inc.
Slurry pump motors	General Electric Co.
Slurry basin agitators, 38-ft. diam.	Manitowac Shipbuilding, Inc.
Air compressors, 390-cfm., 40 psi.	Fuller Co.
Kiln feeders, 13-in. buckets	Allis-Chalmers Mfg. Co.
Kilns, 11 1/4 x 400-ft.	
Fans, 160,000 cfm.	Buffalo Forge Co.
Clinker coolers, 7 x 44-ft.	Fuller Co.
Clinker conveyors, 18-in. drag	Kensington Steel Co.
Electrostatic precipitators	Koppers Co., Inc.
Clinker breaker, on cooler	Fuller Co.
Cement mills, 9 x 30-ft.	Allis-Chalmers Mfg. Co.
Cement mill motors, 1,000 hp.	General Electric Co.
Air separators, 16 ft., 125 hp.	Sturtevant Mill Co.
Dust collectors	Northern Blower Co.
Cement pumps, 9-in. Type H.	Fuller Co.
Cement conveyors, 18-in. screw	Link-Belt Co.
Cement elevators, 2 1/2 x 5-ft.	Chain Belt Co.
Bagging machines, 4-tube	St. Regis Paper Co.
Dust collectors, packing building	The W. W. Sly Mfg. Co.
Bag trucks, L-500-P.	Towmotor Corp.
Plant motors	General Electric Co.
Overhead cranes	Harnischfeger Corp.
Electrical transformers	General Electric Co.

# announcing the new Manitowoc model 3600 3 yard shovel

## ENGINEERED TO MATCH TODAY'S BIGGER HAUL UNITS

Want more digging power, more cycle speed, more output — more *profit* even from low bid jobs? Then you'll want all the facts about the big, *new* Manitowoc 3-yd. Model 3600 shovel. Here is a tough, fast unit with all the modern, big output features you need to make money in today's highly competitive market.

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New, high-sided hauling units require a shovel with the correct shipper shaft positioning . . . the exact dipper pitch and shape to provide higher reach and cleaner dumps. Result — faster work cycles and no loading bottlenecks.

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loss in the gear train . . . increases cycle speed. Here's a big machine in the high capacity class which offers the speed and responsiveness of small capacity rigs. And for smoother power transfer the torque converter system includes a "governor" to maintain rigid control of the infinite variety of power ratios. Line pull and line speed factors are balanced against load resistance, resulting in smooth, powerful operation and long machine life.

**The new 3-yard 3600 makes hard jobs easy.** Responsive air controls let your shovel runner perform at top efficiency all day without fatigue. Smooth-acting clutches and positive-action brakes respond instantly to the operator's touch even on the toughest jobs.







**The new 3-yard 3600 stays on the job longer.** Tough, internally reinforced, box-section dipper sticks; a massive shipper shaft; a tubular, alloy boom; a manganese dipper and many other long-life features keep the 3600 working longer with fewer service delays.

**The new 3-yard 3600 is quickly convertible to crane, clamshell or dragline operation.** You get a smooth-lifting, 65 ton

capacity crane — a big-yardage, long-reach 3-yd. dragline. Simple boom connections make front end conversion in the field fast and easy.

**See your Maniwoc distributor now for more facts on the new 3-yard 3600.** There are dozens of other profitable features to help you step up production in your pit. Get more information *today!*

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20 TON - 100 TON

**SHOVELS**

1-YD. - 5½-YD.

**DRAGLINES**

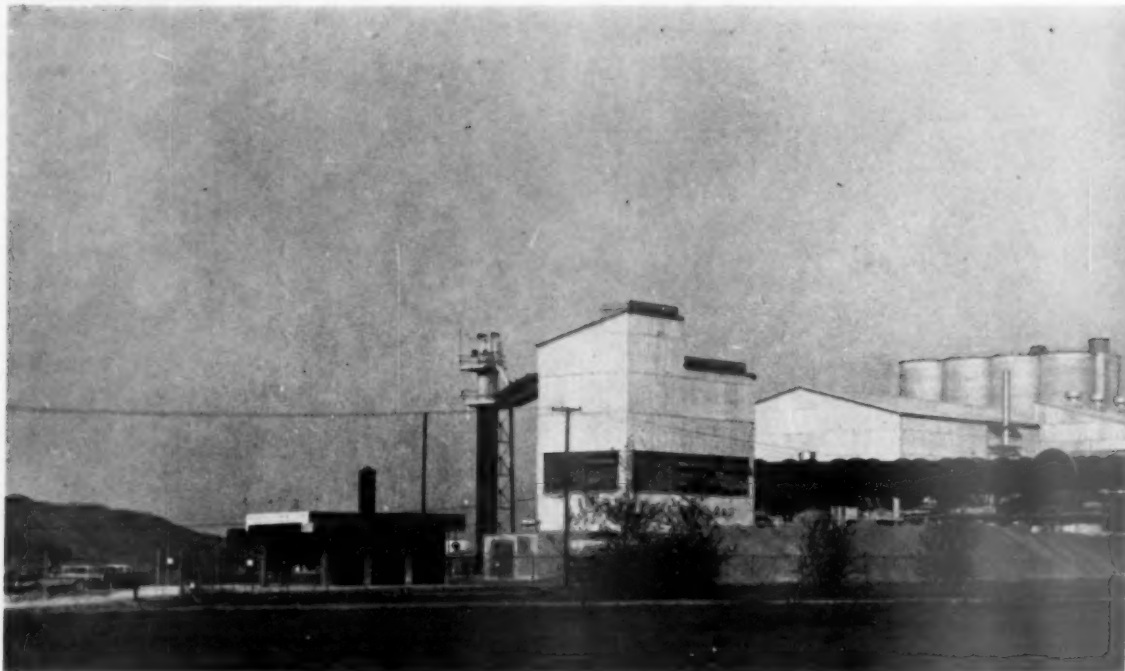
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1-YD. - 2½-YD.

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## CEMENT PLANT No. 5



# Rod mill crushes limestone for wet

**P**ROBABLY THE FIRST CEMENT PLANT in the country to use the method, this Michigan plant uses a rod mill as a primary reduction unit in converting limestone to slurry. Because the 1¼-million-bbl./yr. plant is located on 14 acres in a metropolitan city, that feature assisted management in using the high-cost space for the plant and also to allow room for expansion. At this plant, rod-mill grinding has eliminated much space normally taken up by large thickeners, classifiers and filters common to wet-process plants.

The plant is believed to be one of the most efficient in the country; it operates with only 65 men on three shifts. It resulted from thorough economic studies, careful engineering design and exacting specifications. The plant is a model of good housekeeping and cleanliness. High requirements in dust, smoke and fume controls of a metropolitan city have been met.

Features of the new plant, in addition to the rod mill, include the use of attrition mills to reduce either clay-limestone slip or clay-limestone slurry. Minus 1-in. stone is purchased and barged in by self-unloading barges that discharge to an open storage. An unusual feature here is that stockpiles are managed with a bulldozer instead of the usual belt conveyors. The storage area consists of a concrete slab, 30 in. thick, that is supported

by nearly a thousand piles driven 85 ft. to bed rock. The slab supports 90,000 tons of limestone in a pile 90 ft. deep.

Raw clay, purchased and delivered by truck or rail, is first processed in a pair of wash mills. Mechanical agitation makes a clay slip of uniform density, which is pumped to the rod mill that also receives minus 1-in. stone. The rod mill is a 7 x 22-ft. unit that produces a minus ¼-in. product that is introduced to a 7 x 22-ft. tube mill. Product of the tube mill is a minus 200-mesh slurry that goes to the blending tanks. Although the one-kiln plant now has capacity for 1¼ million barrels of clinker a year, grinding capacity of nearly 2 million barrels a year of cement is available. Space is available for adding two more kilns when more production is needed.

Blended and finished slurry is sent to two holding tanks ahead of the 11½ x 425-ft. kiln. Feed to the kiln is through a ferris-wheel feeder, and excess slurry is recircuited to the holding tank. Kiln production of clinker varies between 24 and 29 tph. The kiln is coal fired; from 6 to 9 tons of coal are used per hour.

Control of kiln operation at maximum efficiency is through a complete set of kiln controls located in the firing building. Only one man is required to operate the kiln with the aid of the controls.

## OPERATIONAL DATA

<b>General</b>		<b>Product handling</b>	
Plant location	— Michigan		— pumped to blending tanks, then to holding tanks ahead of kiln; excess returned to holding tank
Plant capacity (bbl./yr.)	— 1,250,000		
Type plant	— wet		
Raw material procurement	— purchase limestone, clay		
<b>Quarrying</b>		<b>Burning</b>	
No quarrying done		No. and size of kilns	— one 11½ x 425 ft.
<b>Haulage</b>		Kiln fed by	— ferris-wheel type feeder
Method of limestone shipment	— lake vessels	Daily output of kiln, tph.	— 24-29
Method of unloading	— self-unloading vessels	Fuel used	— coal
		Fuel used per bbl. clinker (est.)	— 1,100,000 Btu.
Haulage from outside stocks to inside storage	— bulldozer moves to overhead cranes	Dust collecting equipment	— mechanical and electrostatic
Outside storage area	— concrete slab, 30 in. thick, rests on piles driven 85 ft. to bed rock; supports 90,000 tons of limestone	Clinker cooler	— reciprocating grate type
<b>Crushing</b>		<b>Finish grinding</b>	
Preliminary reduction	— rod mill, reduces to minus ¼ in.	No. and type of mills	— two single-comp. ball mills
Size of mill	— 7 x 14 ft.	Size of mills	— 10½ x 17 ft.
Size of mill feed	— minus 1 in.	Capacity of each mill, bbl./hr.	— 130
Primary clay-processing units	— two attrition mills, wash mills	Size of mill product	— not available
Size of wash-mill product	— minus ¼ in.	Amount of gypsum added	— 4 percent
Processed clay delivered to	— rod mill	<b>Storage and packing</b>	
<b>Raw grinding</b>		No. of storage units	— 8 concrete silos
No. and type of mills	— one tube mill	Capacity of each, bbl.	— 20,000
Size of mill	— 7 x 22 ft.	No. and type of bagging machines	— none
Size of mill product	— minus 200-mesh	Method of shipping	— rail and truck
		<b>Crews and productivity</b>	
		No. men in plant	— 65; no other information available

## process

The dust-control system consists of an electrostatic precipitator in series with a mechanical dust collector. Dust collected in the mechanical units is processed through a pug mill and the product is reintroduced into the kiln. Dust from the electrostatic collection unit goes to a balling wheel and the pellets are rejected.

Hot clinker is reduced in temperature from 2,600 deg. F. to 150 deg. F. in a reciprocating grate cooler. Cooled clinker is crushed and conveyed back to the mill building for storage.

There are two closed-circuit grinding systems in the finish grinding department. Feed to the two single-comp. 10½ x 17-ft. ball mills is by automatic weighing feeders. They deliver about 25 tph. of clinker and 1 tph. of gypsum to each mill. Capacity of each mill is 130 bbl. per hour.

Pneumatic conveyors carry finished cement to eight concrete silos with 20,000-bbl. capacity each. Bulk shipments by truck and by rail can be made simultaneously.

END

## MAJOR EQUIPMENT REFERENCE

Plant engineering and design	Giffels & Vallet, Inc. L. Rosetti
Rotary kiln	Traylor Engineering & Mfg. Co.
Rod mill and ball mills	Allis-Chalmers Mfg. Co.
Electrostatic precipitators	Buell Engineering Co.
Dust collectors	
Dust balling wheel	Allis-Chalmers Mfg. Co.
Speed reducers	Falk Corp.
Belt idlers	Stephens-Adamson Mfg. Co.
Airslides	
Screw conveyors	
Clinker coolers	Fuller Co.
Dust collectors	
Overhead cranes	Marnischfeger Corp.
Bulldozer	Oliver Corp.
Transformers	
Plant motors	
Panel board	General Electric Co.
Switchgear	
Rectifiers	
Kiln firing control	
Kiln panel board	Bailey Meter Co.
Clinker and gypsum feeders	Jeffrey Mfg. Co.
Bowl mill	Combustion Engineering, Inc.
Fans	American Blower Co.
Elevator	Chain Belt Co.
Attrition mill	Saur Bros. Co.
Slag dryer	Dorr-Oliver Inc.

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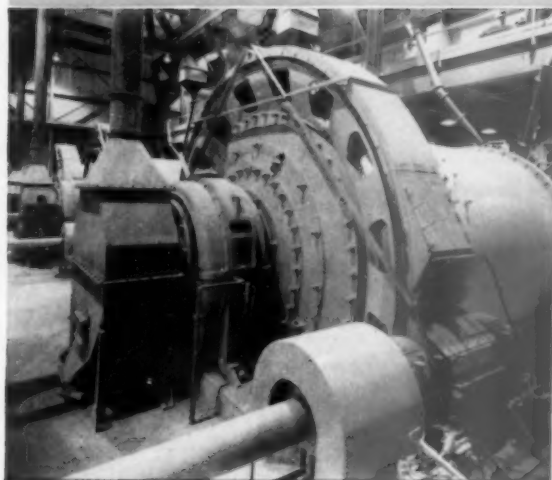
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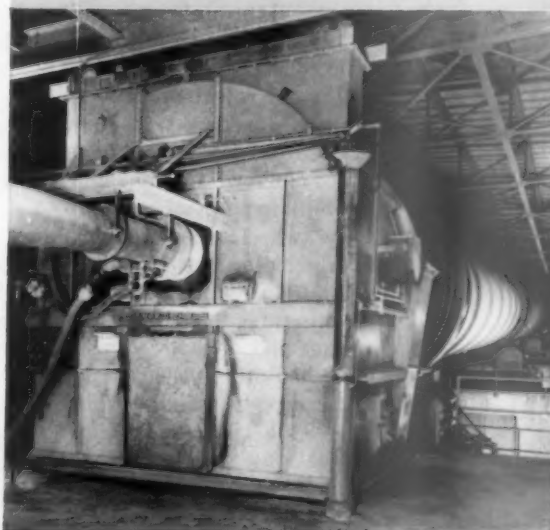


• Directly above is a view showing one of three 11' x 17' Nordberg Grinding Mills recently installed for finish grinding operations at a large Midwest cement plant.

• The large illustration at the right shows part of a group of five 11' x 17' Nordberg Grinding Mills installed for dry process service at a newly completed cement plant.

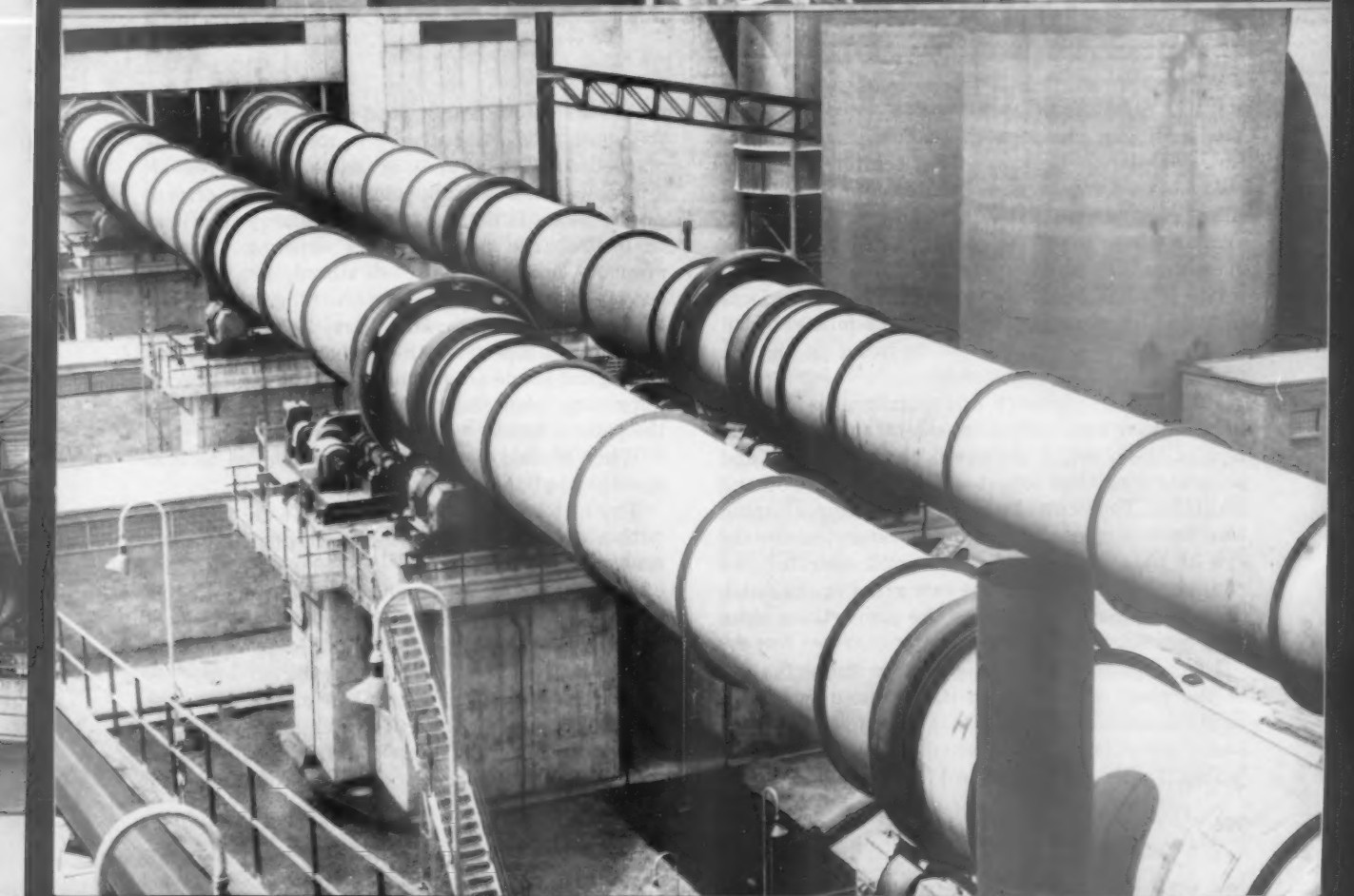
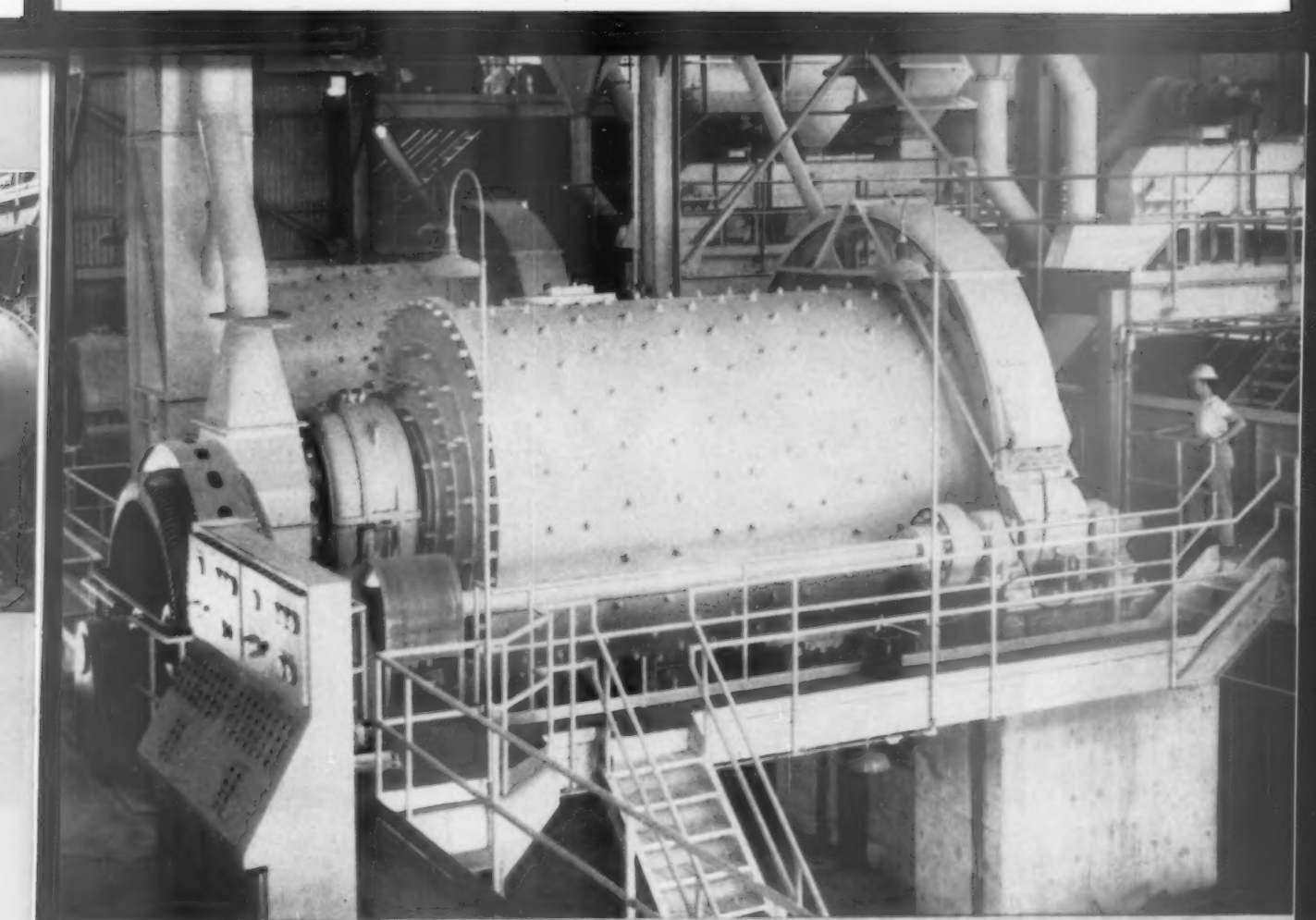
• Illustrated at the right are two 11' diameter x 360' Nordberg Rotary Kilns installed during the recent expansion of a large Midwestern Portland Cement plant.

• Shown directly below is a close-up view of a new Nordberg Rotary Kiln used in cement processing. Shown from the firing hood end, this unit measures 11' in diameter x 380' in length.



**SYMONS . . . a registered Nordberg trademark  
known throughout the world.**





## CEMENT PLANT No. 6



## Vast reserves prompted building of

**C**EMENT MARKETS ARE SURELY IMPORTANT in locating a new cement manufacturing plant. But this plant was built at its location primarily because vast reserves of high-calcium limestone, silica rock, clays, gypsum, water and iron are available near the plant site. It is situated in a remote area 120 miles from the nearest large city, which is a bustling, growing area. Its remote location made it necessary to build a 29-mile railroad track for transportation and to bring in electric power and natural gas supply.

High-quality product and maximum efficiency in operation were prime considerations in the design of the plant. A feature is the continuous and accurate control of limestone, clay, silica, iron and additives. The control panel for the proportioning feed devices is located in the laboratory, under the eye of the chief chemist. The mill operator can change the total feed to the raw grind or the finish mills, but he cannot change the proportions since they are set in the laboratory.

Efficient dust collection is another major feature of the plant, even though it is located in a relatively unpopulated area. Dust collected in electrostatic precipitators is wetted down and pugged before it goes back into the kiln.

Raw limestone is obtained from a quarry near the plant. It is exceptionally white, being partially marbelized. Two grades of stone are processed: a high-calcium metallurgical grade and cement grade. Stone is hauled from the quarry in trucks that discharge to a primary crusher. Crushed product—minus 8-in. size—is stored, then taken by conveyor belt to a secondary crushing station. The two grades are separated here by crushing and screening. Fines from the preparation of the metallurgical grade are blended with the cement rock, improving plant efficiency. Cement rock feed to the plant is minus  $\frac{3}{4}$  in.

When needed, cement rock is conveyed to storage ahead of the raw grinding mill.

The latter is a 2-comp.,  $9\frac{1}{2}$  x 36-ft. tube mill with a capacity of 90 tph. Mill product is 95 percent minus 200 mesh in size. Slurry, containing 62 percent solids, is screened on a battery of four vibrating screens. Oversize is returned to the mill and the through product is pumped to the blending tanks. No water is added on the screens.

Raw ground slurry goes to one of three 800,000-gal. slurry tanks. One is for blending, another is for special and "off" slurries, and the third is for kiln feed. Feed to each kiln is through a scoop

## OPERATIONAL DATA

### General

Plant location	— California
Plant capacity, bbl./yr.	— 2,500,000
Type of plant	— wet
Raw material procurement	— produce limestone, clay, silica; buy iron
Annual consumption limestone, tons	— 1,000,000

### Quarrying

Type drills	— wagon, vertical rotary
Limestone produced	— metallurgical, cement grade.
Loading unit	— 5-cu. yd. electric shovel

### Haulage

Haulage units	— 18-cu. yd. trucks
Avg. length of haul, round trip	— 1 mile
Conveyor units	— 10, ranging up to 60 in.; total length 2,380 ft.
Conveyor service	— from crusher through 2-stage crushing and stocks to mills

### Crushing

Primary crusher	— 66 x 84 in. jaw
Location of crusher	— near quarry
Size crusher product (primary)	— minus 8 in.
Secondary crusher (2)	— impactor 3¼ x 0 ¾ x 0

### Raw grinding

No., type of mills	— one 2-comp. tube mill
Size of mill	— 9½ x 36 ft.

Mill capacity, tph.	— 100
Proportioning feeders	— completely controlled system of belt-type units fed by vibrating feeders
Size of mill product	— 95 percent through 200 mesh
Product handling	— pumped to one slurry tank for blending; pumped to another tank for feeding kiln; third tank for special and "off" slurries. Each tank holds 800,000 gal.

### Burning

No. and size of kilns	— two 12 x 450 ft.
Kiln fed by	— ferris-wheel type feeder
Daily kiln output (bbl. clinker)	— 3,000 to 4,200
Fuel used	— gas
Dust collecting	— electrostatic
Clinker cooler	— inclined-grate type

### Finish grinding

No., type of mills	— two 2-comp. tube
Size of finish mills	— 9½ x 36 ft.
Capacity, bbl./hr.	— 120
Size of mill product	— 1,850 S.A. Wagner

### Storage and packing

No. and type of storage units	— 12
Capacity of each, bbl.	— 13,000
No. and type of bagging machines	— two 4 spout
Method of shipping	— rail or truck; company has fleet of 29 trucks for shipping.

### Crews and productivity

No information available

## plant

feeder from a constant-head box. A "tell-tale" device lets overflow from the constant-head tank flow back to the main storage tank.

Two 12 x 450-ft. gas-fired kilns are installed about 40 ft. apart, and each is driven with a 200-hp. electric motor. Auxiliary gasoline engines are available in case of power failure. Hot clinker discharges to an inclined grate cooler where temperature is reduced from 2,900 deg. F. to about 200 deg. F., or cool enough to be handled by belt conveyor. It is conveyed to storage.

The finish grinding section has two 2-comp. 9½ x 36-ft. tube mills that grind clinker and gypsum to 1,850 SA Wagner. Capacity of each mill is 190 bbl. per hour. Finished cement is pumped to 12 storage silos, each having a capacity of 12,000 bbl. From storage, cement goes by Airlide conveyors and bucket elevators either to the bulk loading dock or to the pack house.

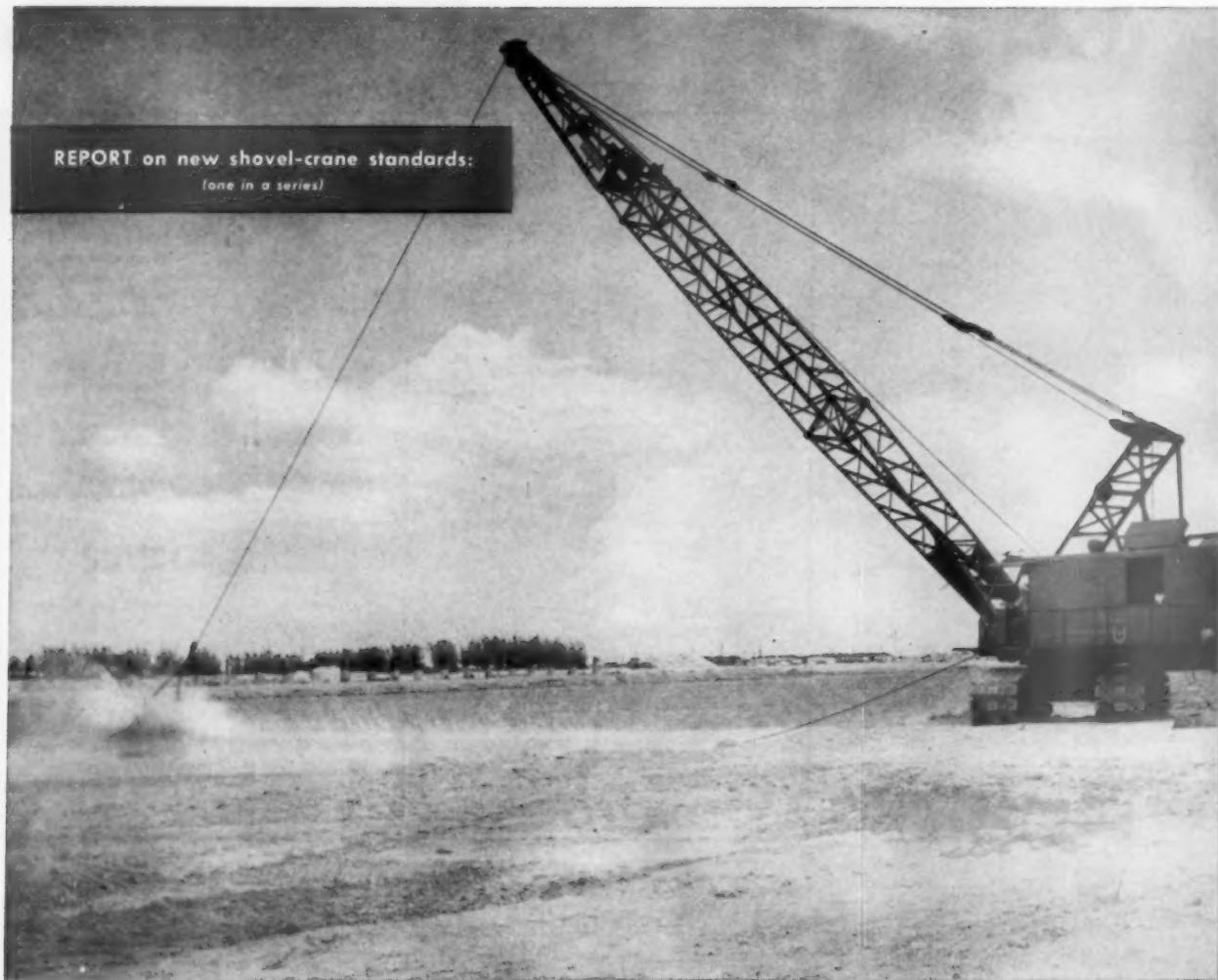
The company has a large fleet of its own trucks for delivering the cement to market. There are 29 bulk haulage units and five flatbed units for hauling sacked cement. The latter are of lightweight construction, allowing nearly a 10 percent increase in loads hauled over conventional trucks. Shipments also are made by rail. **END**

## MAJOR EQUIPMENT REFERENCE

Shovels in quarry, 4½-cu. yd. electric	Bucyrus-Erie Co.
Drilling machines, wagon, rotary type	Joy Manufacturing Co., vertical Gardner-Denver Co., horizontal
Haulage trucks, 18-ton rear-dump	Euclid Div., General Motors Corp.
Primary jaw crusher, 66 x 84 in.	Birdsboro Steel Foundry & Machine Co.
Other crushers:	
20-in. gyratory	Nordberg Mfg. Co.
Impactor	Pennsylvania Crusher Co.
Tube mills, 9½ x 36 ft. Unidan	F. L. Smith & Co.
Kilns, 12 x 450 ft., gas fired	
Clinker coolers, grate-type	Fuller Co.
Kiln controls	Swanson Engineering & Mfg. Co.
Kiln burners	Coen Co.
Kiln control panel	Westinghouse Electric Corp.
Dust collectors	Research-Cottrell, Inc.
Air separators	Sturtevant Mill Co.
Plant motors	Westinghouse Electric Corp.
Pumps	A. R. Wilfay & Sons, Inc.
Vibrating screens (3)	Hewitt-Robins, Inc.
Belt idlers	Chain Belt Co. Hewitt-Robins, Inc. Joy Mfg. Co.
Slurry screens and launders	Dorr-Oliver, Inc.
Feeders, Waytrol	Jeffrey Mfg. Co.
Car puller	Stephens-Adamson Mfg. Co.
Diesel engines	Cummins Engine Co., Inc.
Conveyor belts	B. F. Goodrich Co. The Goodyear Tire and Rubber Co. Quaker Rubber Corp., Div. of H. K. Porter Co.
Belt, truck and rail scales	Fairbanks-Morse Co.
Bridge cranes	Moffat Engineering Co. Harnischfeger Corp. Manning, Maxwell & Moore
Bulk cement trucks	Kenworth Motor Truck Corp.
Fans	New York Blower Co.
heavy duty	Westinghouse Electric Corp.
secondary air	Rees Blow Pipe Mfg. Co.
Airlides and conveyors	Fuller Co.



**REPORT on new shovel-crane standards:**  
(one in a series)



# Upping cycles per shift with

**Standard on every Link-Belt Speeder, Speed-o-Matic fingertip controls minimize operator fatigue. Response is fast, positive, precise**



he stays fresh, works at high speed *all* shift.

**Hydraulic-actuated clutches . . .**  
engage smoothly, surely . . . eliminate jerk, jump or lag.

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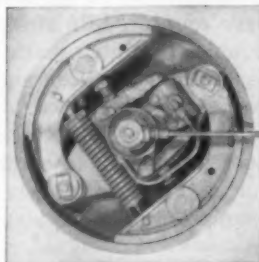
### High speed stockpiling

Three yard dragline at left features exclusive Speed-o-Matic controls as standard equipment. System utilizes oil under pressure maintained by engine-driven pump through variable pressure valves, transmits pressure through oil directly to the hydraulic-actuated clutches. Engagement is smooth, precise. Operator has perfect feel of the load for effective work even when the bucket's under water.

### More usable horsepower

Size for size, Link-Belt Speeder shovel-cranes utilize more of the engines' available horsepower. This bonus pays off in added power at the bucket teeth, greater line pull plus extra power to swing, hoist and travel. Although it gets more usable power and line pull out of the same engines used in other shovel-cranes, a Link-Belt Speeder remains well within the engine manufacturers' recommended operating speeds.

# power hydraulic controls



### Self-compensating clutches

Hydraulic-actuated pistons automatically adjust for heat and normal lining wear. Hydraulic pressure is unaffected regardless of the distance the piston moves to engage clutch.

### Adds an hour's output per shift!

Independent-Swing-and-Travel, available on 11 models, eliminates shifting, saves 20-30 seconds each machine move. All operations are completely independent of each other.



It's time to compare . . . with

# LINK-BELT SPEEDER

Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

Enter 1025 on Reader Card

ROCK PRODUCTS, May, 1958

## CEMENT PLANT No. 7



# Plant called most efficient in North

**A** CANADIAN CEMENT MANUFACTURING company took a considerable risk when it installed a new plant in Ontario to supply much needed cement in the plant's projected distribution area. Through thorough economic studies, the company learned there was an immediate deficiency in cement to the tune of 1 million barrels annually. But, if it built the plant, it faced a possible over-supplied market for seven years. The risk was in making the capital investment in the face of a high ratio of the investment rate per annual barrel of cement to the anticipated price per barrel. The only answer was highest quality of product plus maximum efficiency in production. The risk was taken to the satisfaction of the company officials, since the plant is now considered to be the most efficient on the North American continent. Annual output of the two-kiln wet-process plant is now more than 3 million barrels per year. It is expected that a yearly output of 4 million will be reached with the same equipment.

The plant is most modern in design and all facilities are completely enclosed. Since plant location is only 15 miles from a large city and in the middle of a high-class residential area, much attention was paid to dust collection throughout the whole plant.

Plant features are many. The manufacturing process is geared to automatic operation where possible. Feed to the grinding mills is controlled accurately as to proportioning and rate of feed. No blending tanks are required, since strict feed and laboratory control are maintained. Tests have been conducted to measure the exact flow of slurry to the kilns, with the help of a gamma-ray counter. Isotopes of lanthanum 140 have been added to the feed so that retention time of material in the kiln can be measured by a Geiger counter. Kiln shells are equipped with thermocouples that give continuous temperature readings, so that condition and effectiveness of kiln linings can be determined.

Dust, collected by mechanical and electrostatic units installed in series, is reintroduced into the kilns through the burner pipes. Pulverized coal is used as fuel, and fuel consumption is below 900,000 Btu. per bbl. of clinker.

Raw materials for the mix consist of 75 percent limestone and 25 percent shale. Shale is mined near the plant site, but limestone is purchased and delivered to the plant by rail. A flexible system of crushers, conveyors and screens allows all raw materials delivered to be properly prepared for the raw grinding mills and stored.

Raw grinding is by four 8 x 37-ft. 3-comp. slurry

# CASE HISTORY STUDY

## OPERATIONAL DATA

### General

Plant location	— Ontario, Canada
Plant capacity (bbl./yr.)	— 3,000,000 plus
Type of plant	— wet
Material procurement	— shale produced by contract at site; purchase limestone, iron, gypsum.
Planning opening of limestone quarry	

### Quarrying

No limestone quarried

### Haulage

Haulage units, for shale	— 10-ton trucks
Limestone delivery	— from two sources by railroad cars
Size of stone delivered one source, minus 6 in. from other	— minus ¾ in. from

### Crushing

Primary crusher	— 30 x 50 in. single-roll for shale
Location of crusher (shale)	— plant
Size crusher product (primary)	— minus 5 in.
Secondary crusher (stone)	— reversible impactor, 450 tph.
Size crusher product (secondary)	— minus ¾ in.

### Raw grinding

No. and type of mills	— four 3-comp. ball mills
Size of mills	— 8 x 37 ft.
Speed of rotation, rpm.	— 18.7
Mill capacity, tph.	— 35-60
Proportioning feeders	— complete system of vibrating and belt-type feeders that are used to control blending of mix
Size of mill product	— 80 percent through

Product handling — 200 mesh  
— 6-in. pumps move to one of two slurry pits, then to two kiln basins. Each basin holds 34,000 bbl. 4 in. pumps move to kilns from basins.

### Burning

No. and size of kilns	— two 11½ x 13 x 402 ft., 60 rphr.
Kilns fed by	— ferris-wheel type feeder
Daily kiln output (bbl. clinker)	— 5,700 peak
Fuel used	— coal
Fuel used per bbl. clinker	— 900,000 Btu.
Dust collecting equipment	— mechanical and electrostatic
Clinker cooler	— size 744 inclined air-quenching

### Finish grinding

No. and type of mills	— five 2-comp. ball mills
Size of mills	— 10 x 28 ft.
Speed of rotation, rpm.	— 16.8
Capacity, bbl./hr.	— 185
Size of mill product	— 3,100 Blaine
Amount of gypsum added	— 3.5 percent

### Storage and packing

No. and type of storage units	— 20 concrete silos
Capacity of each, bbl.	— 8,000
No. and type of bagging machines	— five 4 spout
Percent of product bagged	— 35
Method of shipping	— rail, truck or water

### Crews and productivity

No information available

# America

mills. Electrically interlocked vibrating feeders maintain accurate control over the slurry mix. The mill product is sampled hourly, and samples are sent to the laboratory through a pneumatic-tube system.

Slurry is pumped to either of two 80 ft. diam. post-tensioned concrete slurry basins; an additional two basins of identical type and size receive slurry from the first two and serve as kiln feed basins. No circulation of slurry for blending purposes is needed, because of the accurate control of raw grind feed.

Feed to each of the 11½ x 13 x 402-ft. kilns is by ferris-wheel feeder, which is synchronized with the kiln drive motor. Automatic and accurate control is a feature of the kiln section. The kilns are said to have the largest capacity of any on the continent; peak capacity is 5,700 bbl. per day.

Accurate control also is featured in the finish grinding section. Five 10 x 28-ft. 2-comp. ball mills are used, each having capacity for 185 bbl. per hour when grinding Type I cement.

Flexibility and ease of handling are featured in the packing house. Twenty concrete storage silos are available for storage of 160,000 bbl. of cement. Shipment may be made of bulk or bagged cement by rail, truck or water. **END**

## MAJOR EQUIPMENT REFERENCE

Unloading hopper feeders, vibrating	Syntron Co.
Shale crusher, single-roll, 30 x 50-in.	Pennsylvania Crusher Co.
Primary impactor, 450-tph.	
Belt conveyors, 30-in.	Stephens-Adamson Co.
Scalping screens, vibrating, 5 x 12-ft.	Canadian Allis-Chalmers
Dust collectors, bag type	Northern Blower Co.
Overhead cranes, 20-ton	Provincial Engineering Co., Ltd.
Vibrating feeders, Waytrol	Jeffrey Mfg. Co. of Canada, Ltd.
Slurry mills, 8 x 37-ft., 3-comp. Compeh.	Canadian Allis-Chalmers
Slurry pumps, 4 and 6-in.	A. R. Wilfley & Sons, Inc.
Slurry basin agitator, SX	The Dorr Co.
Rotary kilns, coal-fired, 12 x 402-ft.	Canadian Allis-Chalmers
Clinker coolers, air-quenching	Fuller Co.
Clinker crusher, Hydrocone	Canadian Allis-Chalmers
Electrostatic precipitators with Multiclone	Precipitation Co. of Canada
Air slides and pumps	Fuller Co.
Coal mill, Raymond Bowl	Combustion Engineering, Inc. Raymond Div.
Cement mills, 10 x 28-ft. 2-comp. Compeh.	Canadian Allis-Chalmers
Air separator, 16-ft.	Sturtevant Mill Co.
Bagging machines, 4-spout	St. Regis Paper Co.
Bulk cement carriers, self-unloading, Pneumex	Polysius GmbH.
Air compressors:	
two-stage, water cooled	Canadian Ingersoll-Rand
single-stage rotary	Fuller Co.
Electrical transformers:	
5,500 KVA	Brown Boveri (Canada) Ltd.
1,000 KVA	Westinghouse Electric Corp.
Electric motors for slurry and cement mills	General Electric Co.





# WORK BULL



Instant-reversing Work Bull 1001 has  $\frac{3}{4}$  cubic yard payload capacity. Special shock-load absorber minimizes spillage of heaped loads over rough terrain. Available in both gasoline (52 hp) and diesel (47hp) models.



Low pivot points put Direct Line of Thrust below the wheel axle to place more tractive weight on drive wheels. 43° tilt back at ground level creates 5,200 pounds of breakaway power!

Sliding Lift Arms guided by telescoping tension members give the 1001 a mammoth reach when arms are raised, but maintain "close-in" workability when in digging position.

As a Fork Lift or Swinging Crane, the Work Bull 1001 unloads palletized, cubed, bagged, or bundled material, reinforcing rods, and concrete forms . . . handles screens and crushers.

Angle Dozer has 84" blade with hydraulic tilt control. It is an excellent tool for maintaining bench roads, plowing snow, recovering spillage, and other utility operations.



# **1001 WITH INSTANT REVERSING, 43° ROLLBACK, AND DIRECT-LINE THRUST IS UNBEATABLE IN STOCKPILING OPERATIONS!**

Superior performance...that's what makes the Work Bull 1001 Multi-purpose Tractor Loader second to none in the loader field! Instant reversing — by simply changing your foot from one pedal to another — gives you the advantage of cost-reducing speed in stockpiling and other time-cycle operations. The same pedal also serves as an accelerator.

Torque converter automatically adjusts power between speed and load requirements.

Full-time power steering and three-spool valve are standard equipment. So is special shock-load absorber that minimizes spillage from big  $\frac{7}{8}$  cubic yard bucket... prevents damage to hydraulic system as you operate over rough terrain.

Roomy, comfortable seat; convenient controls; and "no blind spot" visibility reduce operator fatigue for fast, efficient production all day.

In addition to its many other features, the 1001 brings unsurpassed versatility to large-plant operations. It converts to a Fork Lift, Angle Dozer, Rotary Broom, Backhoe with its own backfill blade, Swing-ing Crane, Pick-Up Street Sweeper, or Scarifier! Each attachment is Power-Matched to the Work Bull so that it performs each function so well you will think it is intended for just that one purpose.

Watch a demonstration! See for yourself how this amazing new low-inventory rig will save money for you!

## **ALL-NEW WORK BULL FORK LIFT**

The powerful, new Work Bull Fork Lift is the best rig you can buy for efficient materials handling both on and off hard surfaces!

Ten Power-Matched attachments include 48" Forks (standard), hydraulically dumping Materials Bucket, adjustable Block Tines, Side Shift, Angle Dozer, and 20' Mast Extension.

Three-spool valve is standard...no additional

hydraulics needed for quick-change attachments. Other features include 4,000-pound capacity, finger-tip controls, 8' 2" top clearance, 10' reach (20' with extension), power steering, turn brakes, two forward and six reverse speeds, adjustable counterbalance, and top-quality construction.

The Work Bull Fork Lift is a real cost cutter in any storage yard!

**Get the Full Story on How to Save Manpower and Equipment Expenditures  
Write for this free copy of the 28-page, fully illustrated brochure  
on the complete Work Bull and Davis Line. Ask for Brochure G-4.**

**MASSEY-FERGUSON INDUSTRIAL DIVISION**

**1009 SOUTH WEST ST. • WICHITA 13N, KANSAS**



MASSEY-HARRIS-FERGUSON, INC.



Adjustable Block Forks on Work Bull Fork Lift handle cubed blocks, skids, pallets, etc. Hydraulic Side Shift eliminates close-in maneuvering.



Materials Bucket attachment on Work Bull Fork Lift has 13 cubic foot truck capacity; 45° rollback for batching uniformity. Dumps hydraulically at heights to 10'.

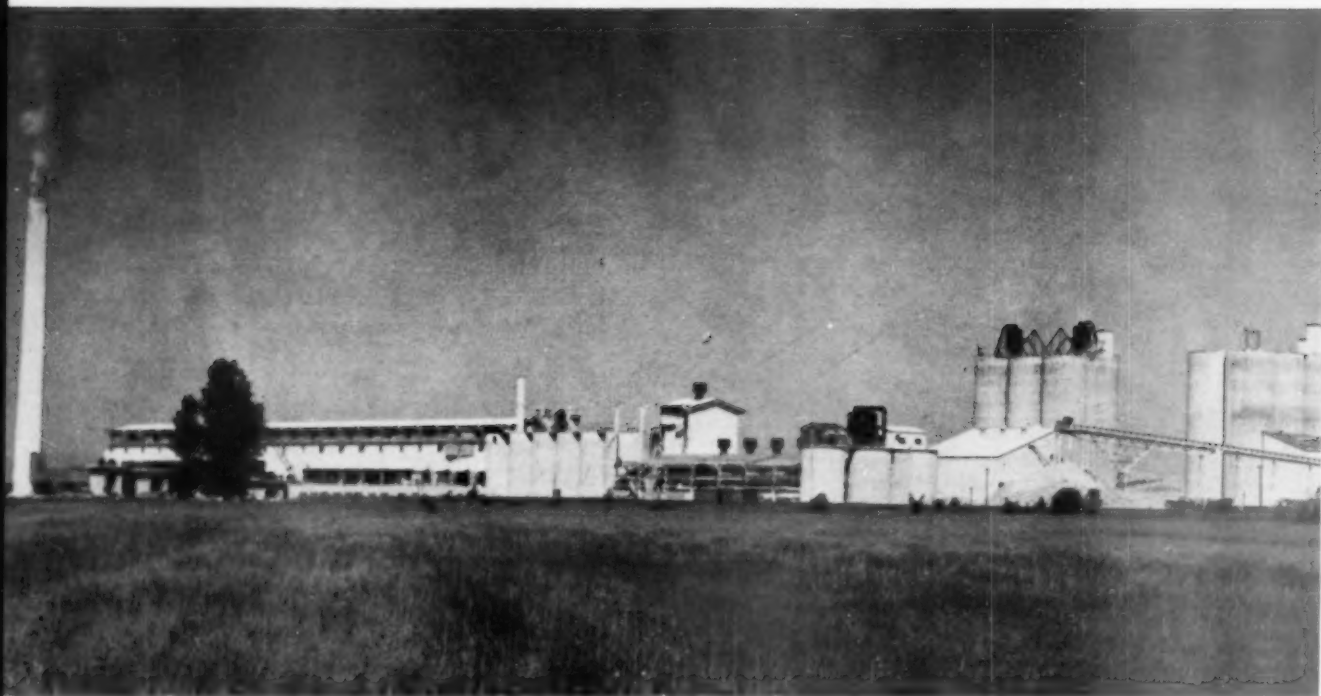


72" Angle Dozer attachment on Work Bull Fork Lift features hydraulic tilt and elevation. Use to build and maintain storage yards and drives; also clean-up.



Mast Extension has 20' reach and 1,000-pound capacity for hoisting into high places. Fork length 36"; carriage width 40".

## CEMENT PLANT No. 8



## Emphasis here is on big equipment,

**T**HE POLICY OF PROVIDING extra capacity in each piece of equipment with no idle capacity in any standby equipment has proved its effectiveness to management at a 1¼-million bbl. capacity plant in Ohio. Design of the new plant is the result of many years of experience in designing and operating plants by company officials. A main, and fundamental, point in the theory is that each machine installed works at maximum efficiency during a scheduled time. Enough time is provided each shift for inspection, lubrication and maintenance work.

Big, single units of equipment typify the entire operation from the quarry through the cement-storage section. The quarry itself is unusual in that two types of rock are produced after stripping 40 ft. of overburden—and one big dragline with a 200-ft. boom does all stripping and loading. First, the dragline strips overburden and spoils it, exposing a dolomite deposit. A single, large drill prepares blast holes in this 18-ft. ledge, and after blasting the dolomite is removed by the same dragline that does the stripping. Removal of this rock exposes a 30-ft. seam of cement rock. Dolomite is

sold, which helps to defray the cost of stripping at the property.

Another big drill prepares the cement rock for blasting. Then, when blasted, cement rock is loaded by the same dragline as it sits atop the dolomite ledge. The same trucks that haul the dolomite are used to haul the cement rock. These are 34-ton twin-diesel trucks. Both types of rock are hauled to a 36 x 60-in. roll crusher for primary reduction. But a bigger 72 x 60-in. hammermill crusher will be made available to handle the cement rock, leaving the roll crusher available for handling dolomite. New equipment will be needed in an expansion program that calls for a duplicate, parallel system throughout with a similar straight line flow of material.

A mobile clamshell crane—another big piece of equipment—works a small storage of local clay into a large wash mill. Since this is a part-time operation, the mobile unit is available to do other jobs around the plant. Clay slip from the wash mill goes to a pair of storage tanks, then to a battery of six slurry holding tanks ahead of the kiln. In the raw grinding department, crushed cement



## no standbys

rock of minus 1-in. size goes to a big 9½ x 36-ft. 3-comp. ball mill that grinds to 90 percent minus 200 mesh. Feed to the mill is controlled by an electronic "electric ear," operation of which is based on the noise level of the ball charge in the mill. The mill product then goes to the slurry holding tanks.

The present kiln is an 11¼ x 425-ft. coal-fired unit—also big. Clinker is processed in a reciprocating grate cooler, then is conveyed by drag conveyors and bucket elevator to raw clinker silos. These conveyors are totally enclosed and dust tight.

One, big 2-comp. 9½ x 36-ft. ball mill makes up the present finish grinding department. It discharges the ground clinker and gypsum product to a 16-ft. diam. air separator through a 20-in. diam. screw conveyor of special design and a bucket elevator. Finished cement goes to one of 12 big silos in a pneumatic conveying system. Quick acting spouts at the silos allow for quick loading of tandem trailer trucks, which are weighed on a 200-ton automatic scale. Cement shipments can be made by truck or rail.

END

### OPERATIONAL DATA

#### General

Plant location	— Ohio
Plant capacity (bbl./yr.)	— 1,250,000
Type of plant	— wet
Raw material procurement	— produce limestone, clay
Daily consumption of raw materials	— not available

#### Quarrying

Type drills	— two vertical rotary, 3-in. holes
Explosives	— dynamite
Stripping	— 10-cu. yd. dragline with 200-ft. boom strips 40 ft. of topsoil and clay
Mining dolomite	— dolomite ledge, 18 ft. thick, drilled and blasted, then loaded by same dragline with 8-cu. yd. bucket; dolomite sold
Mining limestone	— 30ft. seam of cement rock drilled and broken, then loaded by dragline

#### Haulage

Haulage units	— 24-ton twin-diesel trucks
Avg. length of haul, round trip	— ¾ mile
Conveyor units	— two 36 in., total length 1,000 ft.
Conveyor service	— from primary crusher to surge pile ahead of raw grinding mill

#### Crushing

Primary crusher	— 36 x 60-in. roll; propose to add a 72 x 60-in. hammermill to handle cement rock, roll crusher then will handle dolomite
Location of crushers	— quarry
Size crusher product (primary)	— minus 10 in.
Secondary crusher	— 36 x 40-in. hammermill
Size crusher product (secondary)	— minus 1 in.

#### Raw grinding

No. and type of mills	— one 3-comp. ball mill
Size of mill	— 9½ x 36 ft.
Proportioning feeders	— electric vibrating; feed controlled by "electric ear," based on noise level of ball charge in mill
Size of mill product	— 90 percent through 200 mesh
Product handling	— mill product pumped to six slurry tanks that hold mixture of washed clay and ground material

#### Burning

No. and size of kilns	— one 11¼ x 425 ft., 60 rphr.
Kiln fed by	— not available
Daily kiln output (bbl. clinker)	— 3,500
Fuel used	— coal
Dust collecting equipment	— not available
Clinker cooler	— reciprocating grate type

#### Finish grinding

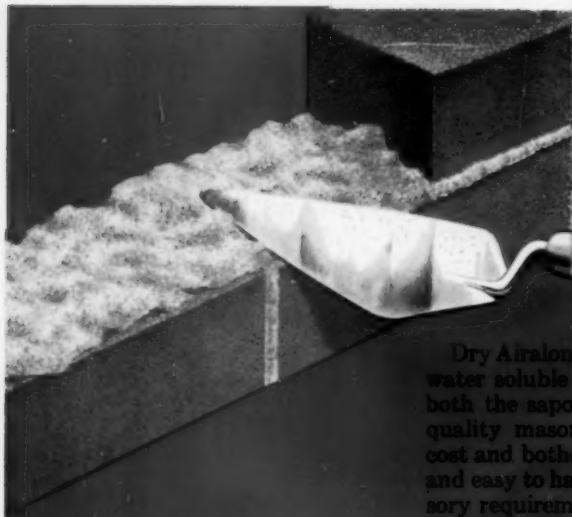
No. and type of mills	— one 2-comp. ball mill
Size of mills	— 9½ x 36 ft.
Capacity, bbl. per hr.	— 150
Size of mill product	— not available
Product handling	— through 20-in. screw to bucket conveyor and air separator

#### Storage and packing

No. and type of storage units	— 12 silos
No. and type of bagging machines	— two 4 spout
Method of shipping	— rail and truck

#### Crews and productivity

Total men employed	— 96; no other information available
--------------------	--------------------------------------



## FOR HIGH-QUALITY MASONRY CEMENT DRY AIRALON

Dry Airalon is a highly efficient mixture of resin and fatty acids in convenient, water soluble "dry-chip" form. It contains, in one ready-to-use compound, both the saponified resin acid and fatty acid required to manufacture high quality masonry cement. "Two-in-one" Dry Airalon thus eliminates the cost and bother of proportioning these two materials separately. Inexpensive and easy to handle, it further helps maintain cost control by reducing supervisory requirements as well as plasticizer costs.

Safe to use because it requires no causticization, Dry Airalon can be counted on to provide consistently uniform air entraining effectiveness. It makes possible greater plasticity and water retention at a given air content . . . or greater strengths at a given plasticity and water retention.

# New Task Force

## OUR "ROCK PRODUCTS CHEMICALS" TEAM

Dewey and Almy—long a leading name in rock processing products—now offers you the coordinated resources of its new "Rock Products Chemicals" team of chemists and engineers.

This team is at your service with information gained through practical field experience and laboratory research. Whether your immediate need is for grinding aids . . . air entraining agents . . . retarders or plasticizers . . . these skilled specialists offer you both the product and the know-how.

Dewey and Almy basic research brings constant improvements in the efficiency and versatility of chemical additives. The Rock Products Chemicals group translates these developments for your own use . . . and will spur *new studies* to meet your specialized needs.

To get details on how this new concept in rock processing products technology can serve you, write:



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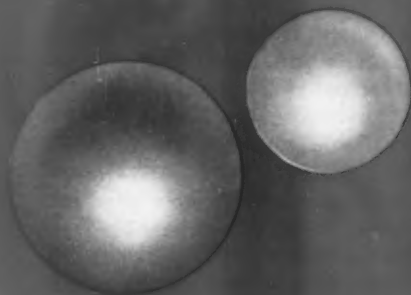
## FOR LOW-COST AIR-ENTRAINING CEMENTS DRY AIRALON

When low-cost air-entraining cements are the order of the day, Airalon is the answer. This multi-purpose compound, easily added as a solution or a dry compound, simplifies inventories, proportioning and handling. Dry Airalon is specially processed in coarse, chip-like form to eliminate hanging-up in feeder bins or hoppers, and permit easy proportioning by means of dry feeders. Dry Airalon "chips" are shipped in protective polyethylene-lined bags—double protection against warehouse caking.

Accepted by ASTM for use in making air-entraining cement in accordance with ASTM C-175, Dry Airalon requires no causticization.

# to Serve You

## FOR GREATER RETURN ON GRINDING MILL INVESTMENT TDA and MTDA



Get ready now for the heavy seasonal demands to come. TDA and MTDA, Dewey and Almy's twin grinding aids, can increase cement mill output by as much as 50% . . . without additional overhead, *without additional investment in plant capacity!* Seasonal bottlenecks can be broken with TDA and MTDA. And those added barrels of cement, available at the time of heaviest demand, can be the most profitable you ever produced.

In closed circuit grinding, too, TDA and MTDA often provide corresponding benefits. Here, cumulative economies result from substantial grinding assistance, reduced "hanging-up" in the separators, and greater separator efficiency.

While TDA and MTDA are most efficient where ball coating conditions exist, their benefits are considerable even when grinding media are clean. Doubt it? Write us for itemized breakdowns of cost.

## CEMENT PLANT No. 9



### Small plant's boast: few men, high

**A** NEW PLANT IN TEXAS is not large, but its management believes that it has an efficiency in operation that tops many plants with three times the capacity. Only 54 men work in this new 1,500 bbl. per day wet-process plant.

This plant is typified by the absence of such heavy-duty equipment as crushers and hammer-mills, since oyster shells are used as the raw material. Another oddity is the fact that the plant uses no overhead crane to handle raw materials. Instead, a raw-materials belt conveyor is used, and the unit also handles cooled clinker from the cooler to stockpile. Management believes that this system helps to reduce the number of men needed to operate the plant, which shows up favorably in output per man-hour and—of course—lower cost of production.

A determining factor in locating the plant at its present site was the availability of water trans-

portation. It allows shell shipment to the plant by barge and also access to water shipment of products with the accompanying advantage of low rates. Another factor in plant location is the favorable economic availability of clay, iron ore, local natural gas and electricity.

Partially crushed and washed oyster shells arrive at the plant by 1,000-cu. yd. barges. They are unloaded by a crane with 1½-cu. yd. clamshell bucket and shells are stocked over a reclaim tunnel. The raw-materials belt conveyor carries shells to a 4,200-cu. ft. shell bin in the mill building. Raw clay comes in by truck. A front-end loader is used to load it into a clay mill. From there it goes to a wash mill and a centrifugal clarifier. The latter removes excess silica and 100-mesh plus material. Clay is further sent to a storage tank and from there to a slurry storage tank.

Shell is fed from the storage bin to a 2-comp.

## OPERATIONAL DATA

<b>General</b>		<b>Product handling, clay</b>	
Location of plant	— Texas	— delivered by truck, then to clay mill; processed through centrifugal clarifier to remove plus 100 mesh material; pumped to slip storage tank, then to slurry storage. Mix pumped to 4 blending tanks ahead of kiln feed tank.	
Plant capacity, bbl./day	— 1,500		
Type of plant	— wet		
Raw material procurement	— purchase shells and clay		
Daily consumption, raw materials	— not available		
<b>Quarrying</b>		<b>Burning</b>	
No quarrying done		No. and size of kilns	— one 10 x 300 ft.
<b>Haulage</b>		Kiln fed by	— ferris-wheel type feeder
Shells hauled by	— 1,000-cu. yd. barges	Daily kiln output (bbl. clinker)	— 1,500
Method of unloading	— crane with 1½-cu. yd. clamshell bucket	Fuel used	— gas
Raw shell storage	— stacked over a 200 ft. long reclaim tunnel	Dust collecting	— not available
Conveyors	— move from tunnel to 4,200-cu. ft. shell bin	Clinker cooler	— rotary air-quenching
<b>Crushing</b>		<b>Finish grinding</b>	
No crushing done. Shells partially crushed and washed before delivery		No. and type of mills	— one 2-comp. ball mill
<b>Raw grinding</b>		Size of mill	— 9 x 22 ft.
No. and type of mills	— one 2-comp. tube mill	No other information available	
Size of mill	— 8 x 26 ft.	<b>Storage and packing</b>	
Mill capacity	— not available	No. and type of storage units	— 6 silos
Size of mill product	— minus 200 mesh	Capacity of silos, bbl.	— 45,000
Product handling, shell	— to classifier, water added to make slurry; pumped to thickener, underflow 40 percent water	Type of bagging machines	— 4 spout
		Method of shipping	— rail, truck or barge
		<b>Crews and productivity</b>	
		No. men in plant	— 54; no other information available

## output

8 x 26-ft. tube mill through a weighing feeder. Ground shell is conveyed then to a classifier, where water is added to form a slurry, and proceeds to a thickener. Underflow from that unit goes to the slurry storage tank to join the clay slip. The mix is pumped to a battery of four blending tanks ahead of the kiln feed tank.

The rotary kiln is a gas-fired, 10 x 300-ft. unit with a 70-ft. chain section for heat transfer. Hot clinker passes through a rotary air-quenching type cooler. After being cooled, it goes by the raw-materials belt conveyor to storage, thence to a bin ahead of the finish grinding department. Cooled clinker can be held in the hand without discomfort. Management believes that rapid cooling is due to a large fan in the upper part of the cooler and effective dispersal of clinker through the cooler.

A single 2-comp. 9 x 22-ft. ball mill does the finish grinding. The mill is in closed circuit with

## MAJOR EQUIPMENT REFERENCE

Crane, 1½-cu. yd. clamshell	Koehring Co.
Crusher feeders	} Jeffrey Mfg. Co.
Mill feeders, Waytal	
Grinding mills, 8 x 26-ft. tube mill	Kennedy-Van Saun Mfg. & Eng. Corp.
Dust collecting equipment	Northern Blower Co.
Front-end loader for clay, 1½-cu. yd.	Allis-Chalmers Mfg. Co.
Centrifugal clarifier for clay	Dorr-Oliver Co.
Thickener	Dorr Co.
Slurry tank agitator	Dorr-Oliver Co.
Kiln	} Kennedy-Van Saun Mfg. & Eng. Corp.
Clinker cooler and crusher	
Screens, conveyors and miscellaneous equipment	
Plant design and construction	
Cement mill, 9 x 22-ft. 2-comp.	
Air separators	Sturtevant Mill Co.
Dust collectors	Fuller Co.

an air separator and dust collector. Fines from the air separator are moved by Airlide conveyor and a 4-in. surge pump into one of the six cement silos. These have combined storage area for 45,000 bbl.

The packhouse is equipped with a four-spout bagger. Either bagged or bulk material can be shipped by truck, rail or barge.

END

# Want a 50% production increase?



Not a normal assignment — this huge hunk of limestone was a challenge the D8 operator couldn't resist. With the No. 8U Bulldozer he moved it almost 100 yd., then pushed it into the pit. The stone probably weighed as much as the D8. This machine is part of a large

Caterpillar-built fleet doing quarry work for Edward Kraemer & Sons, Inc. Get the same high production on your own operation by standardizing on the big yellow machines. On normal assignments or not, they take the hard work in stride and make it look easy.



Caterpillar pioneered the revolutionary "U"-shaped bulldozer, the No. 8U, for use on the Cat D8 Tractor and the No. 9U for the D9.

With a "U"-shaped 'dozer blade, you get the shearing action of an angling blade plus the rolling action of a straight blade. The shearing action of the wing digs into the material, forcing it to the center of the blade where a capacity load is carried the full length of the 'dozing pass. "U"-shaped 'dozers can carry tremendous loads with very little spillage around the sides or over the top—so every pass is a full pass, and every full pass is a profitable pass. In fact, tests have shown you can expect to increase 'dozing production as much as 50%

when you replace your conventional bulldozer with a Caterpillar "U"-blade.

Hard to believe? Your Caterpillar Dealer will prove it for you, with your own rock, gravel or earth. Call him and arrange a no-holds-barred demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## CATERPILLAR

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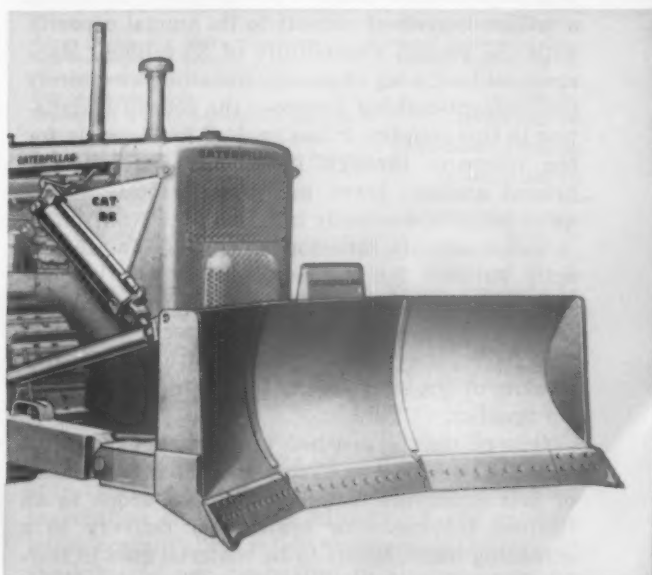
**HIGH-PRODUCTION DOZING**



# Try a "U"-blade on your job!

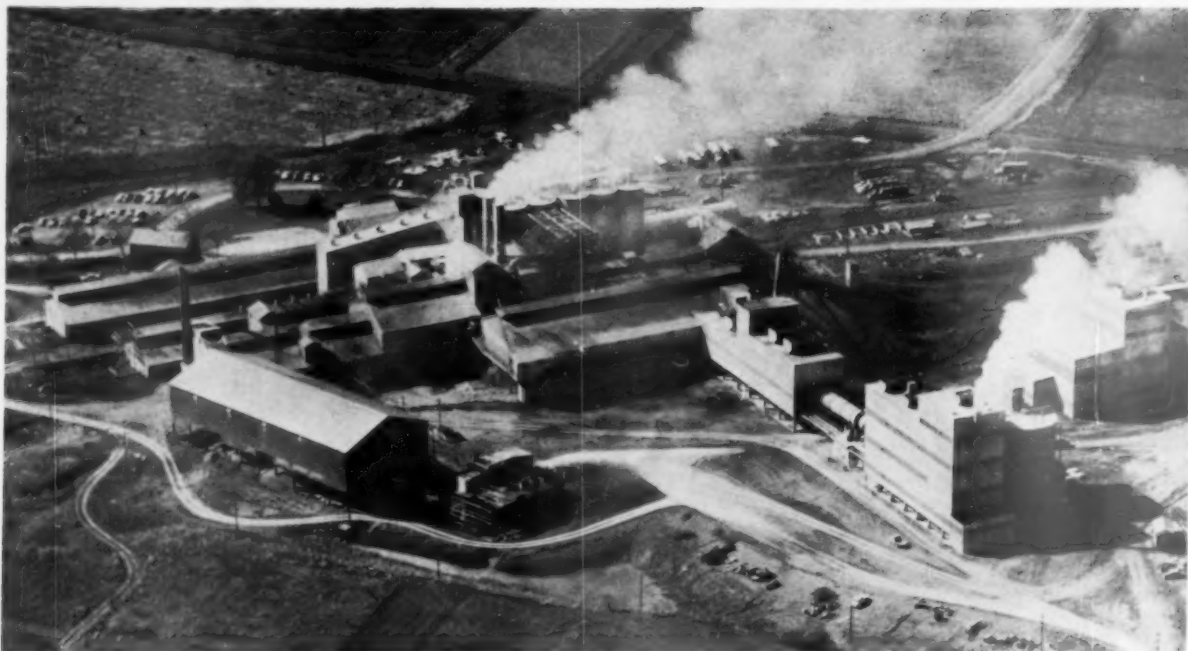


"The hydraulic tilt cylinder on our D8's No. 8U Bulldozer makes loading much easier. By tilting the blade up and down while loading, it keeps the blade free and at the same time it loads the blade faster. It's handy for digging this tough clay. By using one corner,



it breaks up the ground faster."—That's the on-the-job report of Vernon Hamburg, operator for Edward Kraemer & Sons, Inc., Plain, Wisconsin. Mr. Hamburg with his "U"-bladed D8 strips 900 to 1,000 yards of quarry overburden a day.

## CEMENT PLANT No. 10



# A new process goes in . . . results look

**A** PLANT IN EASTERN OHIO has not let its relatively small size stand in the way of expanding into its industrial market. It has added more than a million barrels of cement to its annual capacity with the modest expenditure of \$5 million. Management took a big chance by installing an entirely new cement-making process—the second installation in this country. It has paid off handsomely for the company through increased efficiency, improved quality, lower maintenance costs and—most important—vastly improved dust control.

Raw materials, limestone and shale that are exactly suitable for the requirements of the new process, are available within a few miles of the plant. The limestone crusher, formerly located in the quarry, was moved to the plant to save double hauling of the stone as the face moved away from the crusher.

Quarry rock is crushed in a primary jaw unit and is elevated to a secondary crusher on a series of belt conveyors. Crushed material drops to an inclined belt-conveyor system for delivery to a screening plant. Minus  $\frac{1}{2}$ -in. material goes to storage, while screen oversize is recrushed and recycled in the belt-conveyor system.

A clamshell crane lifts crushed limestone from

ground storage to the top of high storage silos. Raw shale is stored in the same area. It also is lifted to storage ahead of the ball mill feeders. Ball mill discharge is elevated to an air separator that serves each mill. Size of the mill product is 90 percent through 200 mesh. Heated air through the mills dries the fine, finished material, which is moved to storage and blending tanks in a pneumatic conveyor system.

Accurate blending of raw materials is important to the formation of pellets and to the quality of the cement clinker. Each blending, or homogenizing, tank is paved with porous blocks to permit the entry of air under pressure into the finely ground materials. Extra air is admitted to each quadrant periodically, to stir the mixture from bottom to top. Both silos may be operated together, or one can be held as standby storage for the pelletizing pans, the next step in the process.

Blended raw materials are fed to one of the two pelletizing pans through surge bins. Success of the system is achieved by the ability of the 15 ft. diam. pelletizing pans to make a pellet of uniform size and density. Pellet size is  $\frac{3}{8}$  to  $\frac{5}{8}$ -in. diam., but size can be changed by simple adjustment to speed of rotation and angle of inclination of the

## OPERATIONAL DATA

<b>General</b>		<b>Pelletizing</b>	
Plant location	— Ohio	No. of pelletizing pans	— two
Plant capacity (bbl./yr.)	— 1,050,000	Size of pelletizing pans	— 15 ft. diam., 3 ft. deep
Type of plant	— dry, pelletizing	Normal angle of inclination	— 60 degrees
Materials procurement	— produce own limestone, shale	Speed of rotation of pans, rpm.	— 8-10
<b>Quarrying</b>		Percentage of water added	— 12-14
Loading unit	— 8½-cu. yd. dragline	Size of pellets	— ¾ to ¾ in. diam.
No other information available		<b>Burning</b>	
<b>Haulage</b>		Type of kiln feeder	— traveling grate, 12½ x 72 ft.
Haulage units	— various sized trucks, diesel	Bed thickness of pellets	— 7½ in.
Avg. length of haul, round trip	— 12 miles	Speed of grate travel, in./min.	— 40
No other information available		No. and size of kilns	— one 12½ x 160 ft.
<b>Crushing</b>		Fuel used	— coal
Primary crusher	— 30 x 42-in. jaw	Fuel used per bbl. clinker	— 630,000 Btu.
Location of crusher	— plant	Dust collecting equipment	— mechanical
Size of crusher product (primary)	— minus 5 in.	Clinker cooler	— 6 x 100-ft. oscillating conveyor air-quenching type
Secondary crusher	— 42 x 82-in. impactor	<b>Finish grinding</b>	
Size of crusher product (secondary)	— minus ½ in.	Clinker from the ACL system is delivered to company's processing equipment in older section of the plant.	
<b>Raw grinding</b>		<b>Crews and productivity</b>	
No. and type of mills	— two ball mills	No information available	
Size of mills	— 10½ x 17½ ft.		
Speed of rotation, rpm.	— 18		
Proportioning feeders	— belt type		
Size of mill product	— 90 percent through 200 mesh		
Product handling	— 10-in. pumps deliver to two homogenizing tanks, then to holding tanks ahead of two pelletizing pans		

good

pans. Normally, pans turn at 8 to 10 rpm., and inclination is 60 deg.

Either pan discharges green pellets to an oscillating belt feeder that loads the two-pass traveling grate. The two-pass system is an innovation to cement making. It makes the pelletizing process more efficient and more dust free—both essential to modern American installations.

Pellets are exposed twice to the exhaust gases from the kiln in the two-pass system. Raw, green pellets are thoroughly dried as they travel about 40 in. per min. on the slotted grates. Bed thickness of pellets is 7½ in.

Drying is done by the exhaust gases after they have passed through the bed of materials nearest the kiln and after they have passed through a dust collector. This takes place on the traveling grate nearest the feed end. Dried pellets then pass toward the kiln where hot gases from the kiln harden—nearly calcine—the pellets before they enter the short kiln. Exhaust kiln gases are reduced in temperature by the double pass of air through the grate. This also removes kiln dust and conserves heat by bringing pellets closer to kiln temperature before they enter the kiln.

The cement kiln is of conventional design, but

## MAJOR EQUIPMENT REFERENCE

Consulting engineering	W. R. Bendy
Contractor	Macdonald Engineering Co.
Apron feeder, 5 x 18-ft., manganese	Universal Engineering Corp.
Jaw crusher, 30 x 42-in.	Pioneer Engineering Co.
Belt feeders, 30-in.	Chain Belt Co.
Belt conveyors, 30-in.	Link-Belt Co.
Crusher, 42 x 82-in. hammermill impactor	Jeffrey Mfg. Co.
Vibrating screens, 5 x 12-ft.	Allis-Chalmers Mfg. Co.
Ball mills, 10½ x 17½-ft., 1,000-hp. motors	
Air separators, 16-ft.	Sturtevant Mill Co.
Dust collectors	Northern Blower Co.
Coal fired furnaces	Bigelow-Liptak Corp.
Pneumatic conveyors	Fuller Co.
Clamshell crane	Bucyrus-Erie Co.
Elevators, super-capacity	Continental Gin Co.
Pelletizing pans, 15-ft.	Wellman Engineering Co.
Belt feeder	Jeffrey Mfg. Co.
Screw conveyors	
Traveling grate, 12½ x 72-ft.	Allis-Chalmers Mfg. Co.
Rotary kiln, 12½ x 160-ft.	
Clinker cooler, 6 x 100-ft.	

only half the normal kiln length. It is mounted on only two sets of trunnion rollers, which simplifies installation and reduces adjustment and maintenance costs. Pellets retain their shape throughout the kiln and are discharged to air-quenching oscillating coolers. Cold air enters the coolers; it is heated there and passed into the kiln.

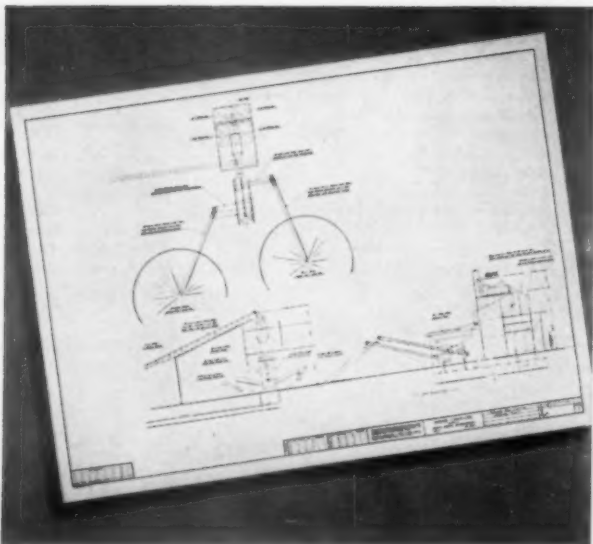
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# NOW! CUSTOM ENGINEERED PLANTS



COMPLETE PLANTS...

## *H-R Rock Products Engineering Group from Flow-Sheet Development*



Clear, orderly, integrated plans such as these developed by the Rock Products Engineering Group result in efficient, low cost operation.

Whether you are planning a new plant or a plant addition you'll want expert engineering assistance all the way. Now, at minimum cost, the Hewitt-Robins Rock Products Engineering Group can put over sixty-five years of aggregates industry experience to work for you right from the start. Equipment selected from Hewitt-Robins standard stock units assures you of fast delivery, quick installation, low maintenance costs, with replacement parts as near as your telephone, and proved performance for many years.

...And the men from Hewitt-Robins are available every step of the way to help make the most economical use of your resources in building an installation geared to produce profits. Here's how:

**FLOW-SHEET DEVELOPMENT**—A thorough analysis of your requirements from raw material to product, plus the utilization of the most efficient equipment selection, is the basis for flow-sheets tailored for maximum flexibility.

**PLANT LAYOUT**—The most practical use of terrain and access, modern conveying and sizing systems, and the latest developments in automation will be included on your flow-sheet.

**EQUIPMENT SELECTION**—The combined knowledge of experts on all phases of your plant (conveying machinery, screens, crushers, conveyor belts) is used in recommending the right equipment for your particular job.



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ADDITIONS ...



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## *Plans Your Expansion at Lowest Cost to Follow-Up Maintenance*

**DESIGN**—Hewitt-Robins, using the latest techniques in structural design, foundations, etc., engineers your plant for fast, easy erection—either by your crew or ours.

**INSTALLATION**—Hewitt-Robins will build the plant complete or furnish any specialized assistance you may require.

**MAINTENANCE**—We also offer maintenance plans which provide for regularly scheduled inspections by our maintenance experts, on-the-job training of your maintenance personnel, and well thought out spare parts programs. This is especially important because H-R manufactures conveyor belt, idlers, screen cloth, as well as replacement parts for other components... items that are integral parts of any maintenance program.

This kind of integrated planning is possible because of Hewitt-Robins' wide experience and technical know-how in materials handling. Each manufacturing division of Hewitt-Robins specializes and is expert in its own phase

of design and manufacture. The Rock Products Engineering Group coordinates this experience and technology to provide you with better integrated plant operation at minimum cost.

You'll find, too, that Hewitt-Robins' nation-wide network of strategically located warehouses brings savings to users of H-R industrial machinery products through faster fulfillment of new orders . . . faster delivery of replacement parts . . . fewer lost production hours when mechanical breakdowns occur.

Hewitt-Robins manufactures a rugged line of equipment for use in the rock products industry, including idlers, conveyor belt, vibrating screens, screen cloth, heavy duty scalpers, feeders, sectional conveyors, reducers, level indicators, and trippers. To find out how Hewitt-Robins products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.



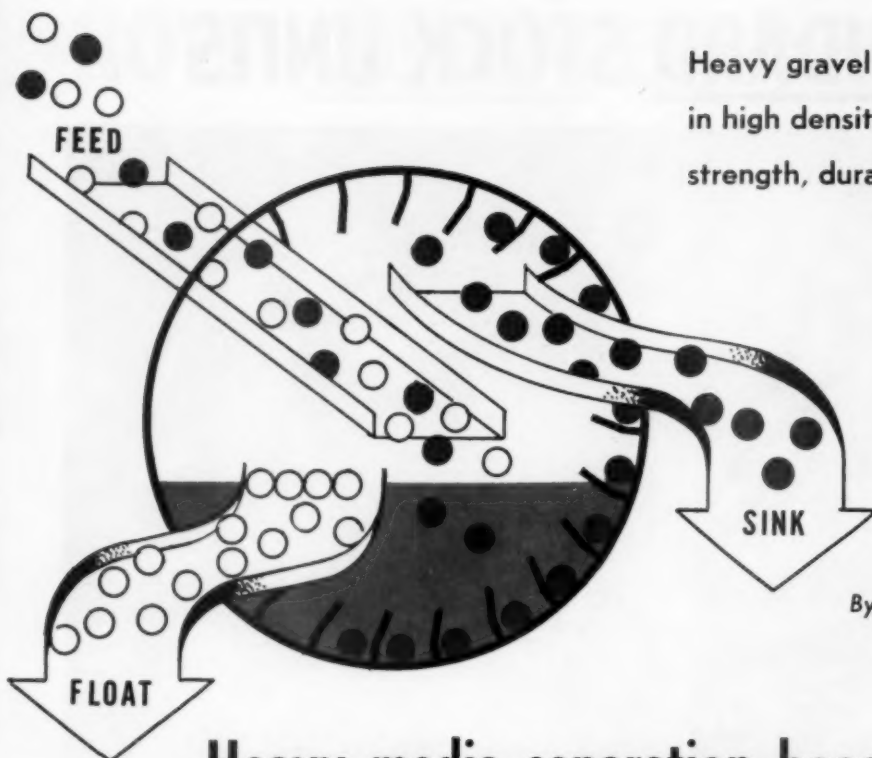
## HEWITT-ROBINS

THE NAME THAT MEANS EVERYTHING IN BULK MATERIALS HANDLING SYSTEMS...  
**DESIGN, MANUFACTURE, INSTALLATION, AND SERVICE OF ALL COMPONENTS**

ROCK PRODUCTS, May, 1958

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Heavy gravel sinks, lighter waste floats in high density medium. Gravel gains in strength, durability, sulfate resistance

By I. S. THYLE and C.E. GOLSON\*

## Heavy media separation boosts gravel value

**A** FEW YEARS AGO any deposit of gravel was a source of road material. Nowadays the highway engineers are tough and getting tougher—they must have rock meeting strict specifications. After all, concrete or black top is only as strong as the individual rock particles making up the aggregate. In addition to the highway engineers, the architectural and the construction industries are also demanding quality aggregate in increasing tonnages.

These demands for better quality and greater quantities of aggregates have forced the sand and gravel industry to do two things: One, to process existing aggregate deposits to meet quality requirements; and two, to find additional sources of aggregate supply. In practice, to meet the demands of quality, the producers first searched for new deposits; these were limited. The next step, and the one governing present conditions, has been to look for means of processing or beneficiating available gravel deposits.

At this point, the ore dressing engineer enters the picture with the heavy media separation process. Heavy media separation is a simple flexible method of separating particles of different specific gravity by placing them in a bath or medium

having a specific gravity between that of the two materials to be separated. The lighter material floats and the heavier sinks. The medium is composed of water and ferrosilicon or magnetite, or a combination of both. When low gravities are required for separation, magnetite is used; for separating gravities in excess of 2.40, part magnetite and part ferrosilicon are used; and where gravities exceed 2.80, ferrosilicon is used exclusively.

The heart of any heavy media plant is the separatory vessel—whether it be the single compartment drum or a cone-type vessel. The latter has certain specific operating characteristics which permit it to treat effectively a feed material containing a large percentage of material whose differential in specific gravity is smaller, and therefore requiring longer retention time for separation. The cone-type vessel gives a longer retention because of its larger area, depth, and volume of media.

Both vessels have the ability to cope with variations in feed rate with only minor adjustments required. One man can operate the plant. The sink and float products of the separating vessel flow by gravity to a screen. This screen is divided long-

Please turn to page 130

\*Aggregate Beneficiation Department, Western Machinery Co.



This Bucyrus-Erie 770-B walking dragline swings a 20-cu. yd. bucket on a 195-ft. boom digging shells for a cement manufacturer in Florida.

# IN THE LOW COST PRODUCTION RACE A WALKER SETS THE PACE ... Bucyrus-Erie Walking Dragline

The economical operation, big production and year-after-year dependability of Bucyrus-Erie walking draglines make them pace setters wherever big volumes of material must be moved at lowest possible cost. You'll find them in quarries, mines and on large construction projects from Minnesota to Morocco . . . from Florida to the Philippines.

Heavy-duty construction from base to

boom point cuts maintenance costs, adds years to machine life. Each machine has *proved* Bucyrus-Erie design superiority — a front end that's very strong yet light in weight — exclusive walking action with design simplicity that reduces maintenance, gives you cushion-smooth moveups. These and many other features combine to give you a high-volume, low-cost-yardage excavator that sets the pace wherever it works.

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**A Familiar Sign . . .** **BUCYRUS-ERIE** **..at Scenes of Progress**

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**perfect balance  
of hardness  
and toughness  
for the long  
economical  
grind**

The alloying, forging and heat treating techniques used by Sheffield assure unvarying quality to the very core of every Moly-Cop ball. This is why they are known for long service and high production economies — why they have become the **STANDARD OF COMPARISON AROUND THE WORLD.**

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**MOLY-COP**

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*Grinding Balls*

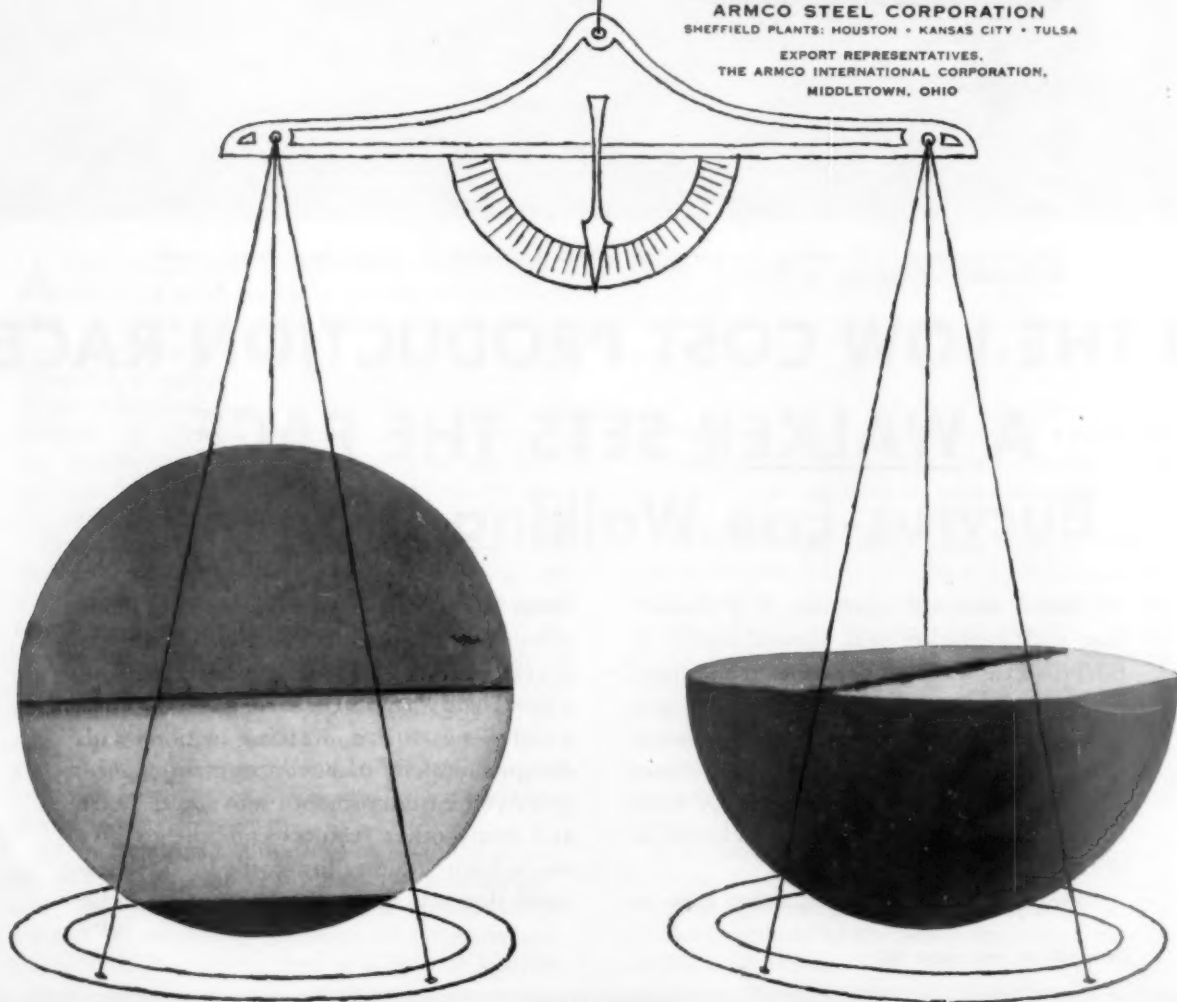
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# Let us show you how the **CASE<sup>®</sup> W-9** can cut your costs

## Compare VISIBILITY

Ordinary loaders



Poor side visibility

CASE W-9



Perfect side visibility

## Compare OPERATOR SAFETY

Ordinary loaders



Boom-arms constantly moving  
on both sides of operator.

CASE W-9



Boom-arms up front  
— out of the way.

## Compare CONVENIENCE

Ordinary loaders



Difficult to get off machine  
with boom-arms raised.

CASE W-9



Easy to leave with boom-  
arms in any position.



1<sup>st</sup> in quality  
for over 100 years

**INDUSTRIAL WHEEL AND CRAWLER TRACTORS  
LOADERS • DOZERS • BACKHOES • ENGINES**

No matter what make of 4-wheel-drive loaders you may own now — or are thinking of buying — it will pay you to *compare them side by side* with the new Case W-9 Terraload'r.

Field tests already have shown that this new Case-built, Case-powered loader can dig more, carry more, dump faster — and with greater safety to the operator — than competitive loaders costing as much as \$1000 more. Best of all, the Case W-9 gives you a choice of 3 quick-change buckets — 1½ cu. yd. for heavy-duty digging, 1¾ cu. yd. for standard materials; and 2¾ cu. yd. for light materials — heaped capacities.

Remember, the *only* way to compare is to see the W-9 in action at your Case Industrial Dealer's — or mail coupon below for a free demonstration on your own job.

## MAIL FOR FREE DEMONSTRATION

**J. I. CASE CO., Dept. E1478**  
**Racine, Wisconsin, U.S.A.**

- ☐ I'd like to see a demonstration of the W-9 Terraload'r (no obligation, of course)
- ☐ Send free descriptive catalog

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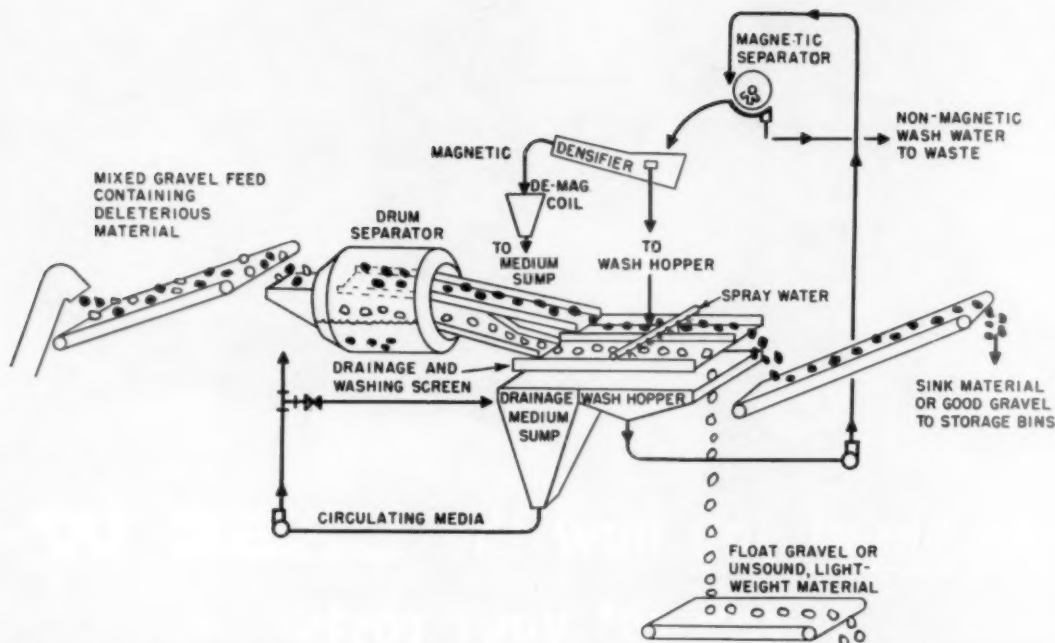
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City ..... State .....

C-TL-170





After leaving the separator, both the "sink" and "float" portions are washed to recover the high density medium,

washed again, and sent to storage. The "float"—vegetable matter, shale and other porous rock, is discarded

## Heavy media separation

*continued from page 126*

itudinally to keep the products separated. The underlying sump is divided into two sections as well. The first part of the screen is mounted directly over a medium sump where the media draining from the rock is recovered and returned to the separating vessel, thus partly closing this circuit. The second part of the screen is used for washing and the removal of the media adhering to the rock. This section is mounted over the wash water sump, from which the wash water and media are pumped to the magnetic separator for recovery of the magnetics; the balance of the nonmagnetic solids are wasted. The recovered media flows into the densifier, which acts as a surge for the media and as feeder for regulating the amount of media returned to the media circuit.

Use of the HMS process in the gravel industry dates back to 1948, when the Royal Canadian Air Force, needing a high grade aggregate for construction of a landing strip near Rivers, Manitoba, found that the only gravel deposit near the project contained about five percent shale and a small amount of rotted granite. Engineers on the project turned to experience gained in other mining fields, and used the difference in specific gravities to remove the shale.

The shale, lighter than 2.45 sg., became the "float," while the "sink" or remaining constituents were made up of hard granite, quartz and silicified limestone. The sink measured up to specifications and thus the use of HMS made it unnecessary to import a large volume of sound aggregates from a distance.

The second HMS installation in the gravel industry was made by the Dravo Corp., Pittsburgh, Pa., on a barge towed behind a bucket line dredge. Experimenting on methods for meeting stringent abrasion and soundness specifications, they found that gravel in their Ohio River deposit ranged from 2.20 to 2.90 sg., with more than 50 percent of the deposit falling between 2.40 and 2.65. Pilot plant HMS runs were made and a definite visual improvement in quality was noted as the specific gravity of the particles increased. Following additional tests and study, they put a full size HMS plant in operation in 1952.

The Dravo Corp. has, through its technical knowledge and engineering ability, furnished considerable data relating to the use of HMS in solving one of the producer's paramount problems. Their experience has produced 1,123,000 tons of material.

Now there are 13 gravel plants which have adopted the HMS method of beneficiation. The majority of these are in the North Central region of the country, where gravel deposits are essentially glacial in origin and contain an appreciable

*Please turn to page 132*



# *Smidth*

## **Ball Mills**

**F. L. SMIDTH & CO.**

*Engineers and Machinery Manufacturers*

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42 Queen's Road  
Bombay, India

F. L. Smidth & Co. of Canada, Ltd.  
11 West 42nd Street  
New York 36, N. Y.

Operating costs of a typical heavy media separation process		
	Cents per ton	
	at 60 tph.	at 100 tph.
Labor	5 ¢	3 ¢
Media consumption	3½ ¢	3 ¢
Power at 1½¢ per kw. hr.	2 ¢	1.2 ¢
Maintenance	4 ¢	3 ¢
Total operating cost	14½ ¢	10.2 ¢

HMS-treated gravel is stronger, requires less cement to develop design strength in concrete			
Untreated (normal six bag mix)		Treated (normal five bag mix)	
Cement	\$6.00	Cement	\$5.00
Aggregate	2.00	Aggregate	2.16
Pozzolan	1.08	Pozzolan	.91
Total cost	\$9.08	Total cost	\$8.07
Saving—\$1.01 per yard			

## Heavy media separation

continued from page 130

portion of porous or weak rocks. Porous rocks in aggregate in this area are particularly objectionable because of the extreme climatic conditions. Formerly, the State of Michigan required limestone, which had to be imported into a great part of the area. Since the introduction of heavy media separation, Michigan has modified its highway specifications to include HMS beneficiated gravel. Five of the 13 HMS plants in this country are in this state.

The rigid specifications which aggregate producers are now being required to meet have resulted from exhaustive tests by concrete research engineers. These men base their definition of suitable aggregate on studies in which major factors are length of use, demand of traffic impact, increased weight and speed on modern highways.

Representative tests have been developed by the Laboratories of many State Highway Departments. They serve to indicate what confronts the industry in meeting the needs of the future, particularly in highway construction.

A test used in the State of Michigan is the Durability Factor. This is a single-value measure of freezing and thawing resistance and is calculated as follows:

$$DF = \frac{PN}{M}$$

where:

P is the dynamic modulus at N cycles of freezing and thawing as a percent of original;

N is the number of cycles at which P reached 50 percent or the number of cycles at which DF is being calculated, whichever is less; and

M is the number of cycles at which DF is being calculated.

Tests were conducted which indicated the increase in durability of Michigan concrete made

from aggregates treated by HMS versus "pit run" material. Comparison of material from three different plants before and after treatment showed there was a decrease of approximately 45 percent in absorption due to removal of porous material. There was a gain in the durability factor of more than 75 percent in Plants 1 and 2. Plant No. 3 showed an increase of 112 percent in durability factor.

As an experiment, tests were made for the purpose of showing the effect of different gravities of chert when 10 percent was added to the beneficiated material. The material with all chert removed from it gave a durability factor of 87. Addition of chert with a gravity of 2.45 to 2.50 reduced the durability to 16, while addition of a chert with a gravity of 2.50 to 2.55 reduced it to 24. With chert of a specific gravity of 2.55 plus, this became 64.

Tests on California aggregate compared pit run and HMS treated material, and these showed beneficiated material to be well within requirements. The sink product had a sodium sulfate loss of two percent; specifications allow 10 percent loss with two percent shale, nine percent loss with four percent shale, etc. Allowable sedimentation value is 6, and finished material showed 2.9. Flexural strength increased 20 percent and compressive strength, 40 percent.

Costs of HMS beneficiation have been averaged at about 14.5 cents per ton in plants handling 65 to 100 tph. This would represent 5 cents for labor; 3.5 cents for media consumption; 2 cents for power; 4 cents for maintenance.

Some operators estimate their selling price on beneficiated material at about 40 cents per ton higher than for the untreated, which allows for direct and indirect costs plus amortization and profit. During a discussion at the 42nd annual convention of the National Sand and Gravel Association

Please turn to page 167





## **"DOWN THE HOLE DRILL"**

# **Boosts Net Tonnage 200%**

**Churn drill — 53 net tons per hr.**

**Piston drill — 152 net tons per hr.**

**Down-the-hole drill — 464 net tons per hr.**

A large Eastern trap rock quarry operated for years with churn drills drilling 6 inch holes on a 16' x 18' spacing at the rate of 2 feet per hour. Purchasing a Quarrymaster using a QD-8 piston drill and 6" Carset bits, net tonnage per hour increased from 53 to 152 tons.

Last summer another Quarrymaster employing an Ingersoll-Rand DHD-400 down-the-hole drill using 7" bits was put in operation. Overall drilling speed even with the larger bit was doubled and hole spacing increased from 16' x 18' to



**20' x 22'! Results — 464 net tons per hour.**

All drilling was in a hard massive trap rock economically undrillable by any other big hole drilling method. Ask your I-R man for complete information and other cost saving examples of Quarrymaster performance.

## **Ingersoll-Rand**

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11 Broadway, New York 4, N. Y.

**DRIFTERS • JACKDRILLS • JACKHAMERS • CRAWL-IR • CARSET BITS • AIR TOOLS • COMPRESSORS**

ROCK PRODUCTS, May, 1958

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"The continuing rise in the cost of wages and benefits has not been wholly offset by improvement in production per man-hour"

HOURLY WAGES AND BENEFITS			
Year	Average hourly wage	Average hourly benefit	Combined average
1953 (1951=100)	111.1	134.9	113.6
1954	113.4	150.0	117.3
1955	118.5	156.5	122.6
1956	128.1	170.4	132.6
1957	133.0	179.0	142.3

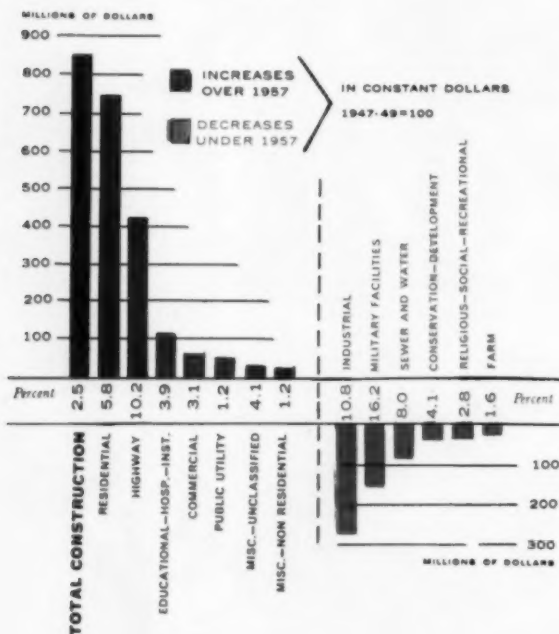
LABOR COSTS AND PRODUCTIVITY			
Year	Average hourly wage and benefit cost	Production per manhour	Production per dollar of labor costs
1953 (1951=100)	113.6	109.0	97.3
1954	117.3	97.4	83.1
1955	122.6	102.0	84.4
1956	132.6	107.9	82.7
1957	142.3	112.5	80.4

## Cement industry modernization

continued from page 79

Some construction will rise

in 1958, some will drop



This has been accomplished not only by adding capacity as demand increased, but also by locating it at strategic points . . . to bring about maximum reach in the market.

The range of a 12-13 percent take runs through all the years shown except 1950. In 1950, we fell behind temporarily, but the deficiency was picked up promptly by capacity increases in the succeeding year.

As another aspect of our business, let's look at labor costs and productivity. The continuing rise in the cost of wages and benefits has not been wholly offset by improvement in production per

man-hour. Thus the index we have maintained since 1951 for productivity (in terms of production per dollar of labor costs) continues to fall.

It should be pointed out that productivity was affected adversely in 1954 and to some extent in 1957 by unusual operating difficulties at several plants. Even so, the only hope of offsetting rising labor costs lies in creating ever greater operating efficiencies. The large-scale plant-modernization work we have begun is a major step in this direction.

There has been tremendous growth in the uses of prestressed concrete, but there are also other important developments. New methods of structural design and use of high-strength reinforcement have made possible the building of graceful thin-shell concrete structures spanning large areas. New types of concrete slabs are appearing in various geometric patterns of high structural efficiency as roofs and walls.

Furthermore, rapid advances have been made in the technique of precasting concrete . . . and in tilting, raising or trucking the finished elements into final location.

Reinforced concrete is being brought by all these developments into increasingly favorable economic relation to other structural materials. Consequently, it is reasonable to expect that its use will increase at a rising annual rate during many future years.

Most new cement producing capacity to serve our 18-state market has now been built and is in operation. Potential annual output presently is about 162 million bbl., 32 percent more than three years ago, when this tremendous expansion began.

But growth in cement use has not kept pace with this great capacity growth. For our market, use actually dropped in 1957 to 105 million bbl., down seven percent from the previous year.

In consequence, and in common with other sections of the country, the industry in our market now finds itself with a substantial excess of ca-

Please turn to page 170



"Parts for our 3 Amsco pumps cost us only 8¢ per ton of material pumped..."



Says Mr. C. S. Harper, Supt. of Flint Sand & Gravel Company, Bluff Creek, Louisiana.

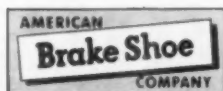
"And since 1928 we've never lost a day of production waiting for parts. Amsco people give us great service.

"The Amsco design is so simple, we can change-out a whole pump in 12 hours. Change impellers in 4 hours. Replace suction liners in only 2 hours.

"We've got two 12-inch, and one 10-inch electric-driven Amsco counterflow pumps with flexible couplings. One of them is 16 years old and still working fine."

Flint Sand & Gravel dredges a 60% sand, 40% gravel deposit. Uses plain suction. Lift is 65 feet over a pipeline length of 900 feet. Flint Sand & Gravel Co. has operated 2100 days without a lost time accident.

Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P containing full information and specifications on the Amsco line.



**AMSCO**

American Manganese Steel Division  
Chicago Heights, Illinois

## IF IT'S R/M HOSE ONLY THE ROCK GOES TO PIECES!



### Long Life features of HOMOFLEX HOSE Assure *for Your* "More Use ~~per~~ Dollar"

Rugged Homoflex Hose is R/M's exclusive construction for use with air, water, other fluids and gases. Strong enough to stand up under the toughest conditions, yet light in weight and flexible as a rope for easier handling . . . even on the roughest, rockiest job site. Exclusive R/M features make Homoflex Hose do a *better* job . . . and *last longer*.

- Mandrel-Made — No Pre-Set Twist, Extremely Flexible
- Inseparable Cover, Strength Member and Tube

- Coils and Uncoils Freely in Any Direction, Resists Kinking
- Balanced Homogeneous Construction Throughout
- Uniform Inside and Outside Diameters — Easier Coupling
- Withstands High Pressures and Surges with Wide Margin of Safety

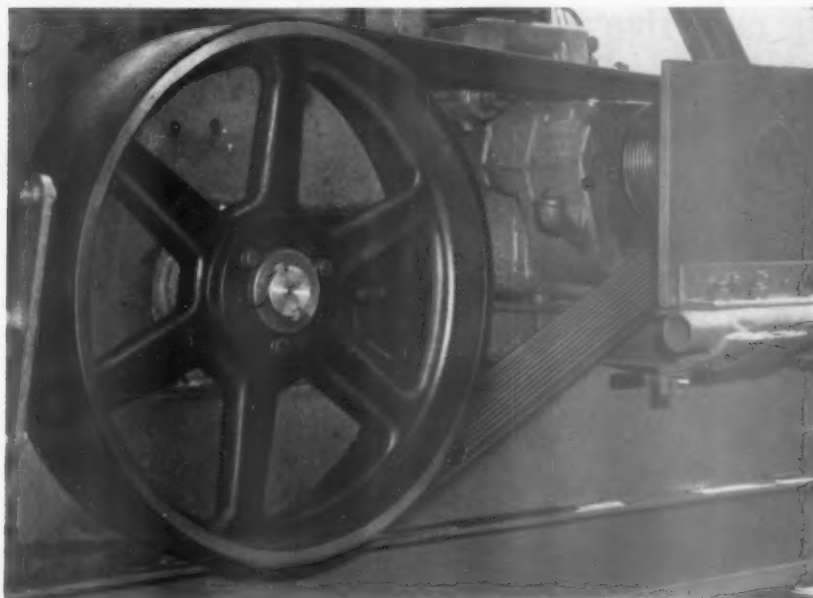
R/M has a hose construction engineered to meet *every* job requirement. Write for Bulletin #6879.





**RAY-MAN CONVEYOR BELT**— Tough, flexible Ray-Man resists gouging and tearing. Double compensation relieves stress on outer belt plies . . . assures longer belt life and lower cost. High fastener holding ability. Other types available for every bulk materials handling requirement. Write for Bulletins.

**R/M POLY-V® DRIVE**— New, patented heavy duty drive delivers up to 50% more power in the same space as conventional multiple V-drive . . . equal power in as little as  $\frac{2}{3}$  the space. Single unit V-ribbed belt design eliminates multiple-belt "length matching" problems. More constant speed ratios, less wear on belt and sheaves, smoother running. Write for Bulletin #6638.



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ROCK PRODUCTS, May, 1958

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Going ahead at full speed, all the plant activities are shown here: quarrying at rear, crushing in center foreground and load-out bins at left center

In only five weeks . . .

## Small plant turns huge hill into roadbed

**M**AKING ROADSTONE OUT OF clay-imbedded limestone is not an easy task—but the spur of a big contract for the material with a rush sign on it can inspire some brilliant innovations. Quarve and Anderson, veteran rock products producers from Rochester, Minn., received a contract calling for 130,000 tons of crushed limestone to be produced in two months.

Thanks to efficient use of special equipment, the enterprising firm did better than that—they completed the order 3 weeks ahead of time. Instrumental in this feat was an impact crusher with an integral wobbler feeder and some plain and fancy hustling by the company's own men.

The roadstone was used to build up a 7-mile stretch of Minnesota Route 30—part of the state's plan to develop a good secondary road system under the provisions of the federal highway pro-

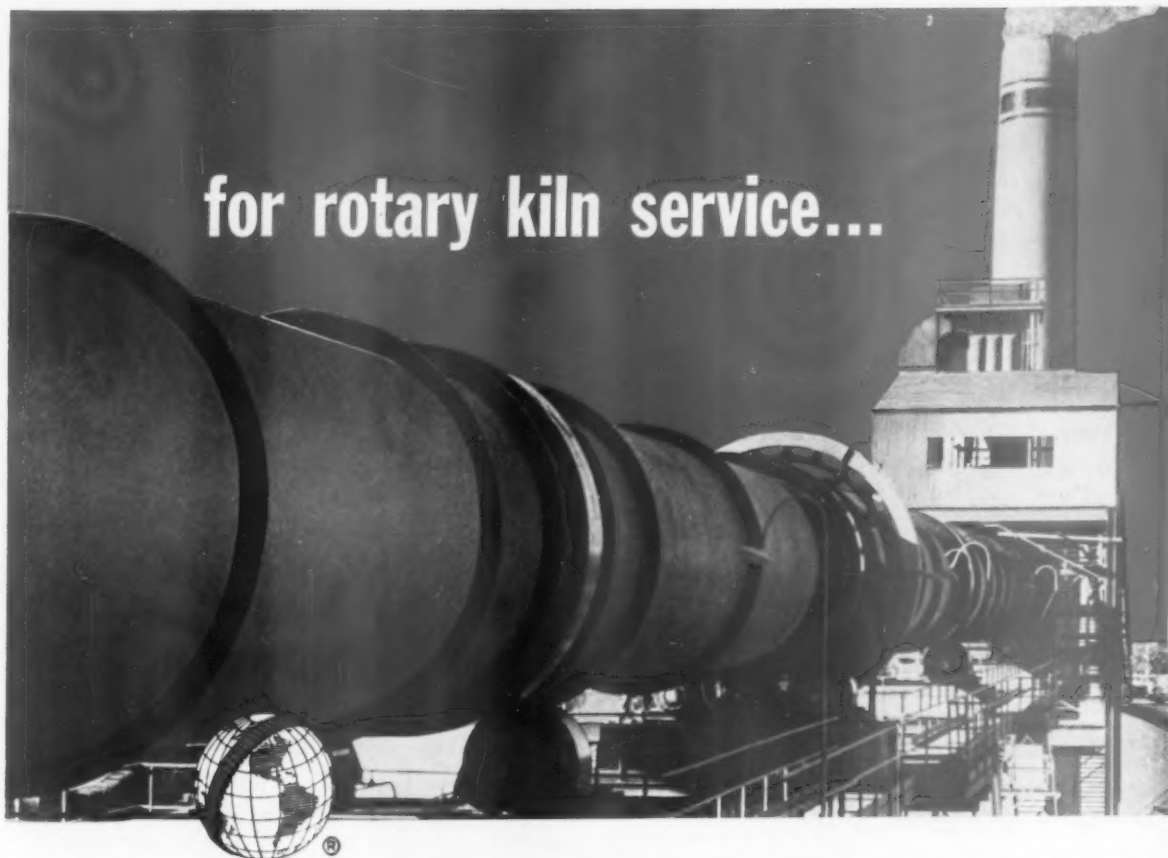
gram. Quarve and Anderson provided nearly 100,000 tons of 1¼-in. aggregate and 30,000 tons of ¾-in. material for the project.

The company quarry and crushing operation is about 10 miles southeast of Rochester, Minn. The deposit consists of about 30 ft. of folded and heavily broken limestone, often surrounded by and mixed with clay and shale. To keep volume production at 350 to 400 tph., the company uses two shovels and one as a standby, three haulage trucks and one standby, and a bulldozer to strip overburden for drilling and blasting at the quarry.

Several drills working the deposit prepare 6-in. holes, 30 ft. deep, for blasting material. They usually use dynamite because the holes are wet, but occasionally have been trying blasting with ammonium nitrate on an experimental basis. To make good roadstone they must include much of the

*Please turn to page 142*

for rotary kiln service...



## HARBISON-WALKER REFRACTORIES of special merit—for every requirement

Select the best for each particular purpose from the full complement of types and classes of refractories which are especially suited for the various conditions involved in the many different rotary kiln operations.

### **Brands With Long Service Records**

*Basic Refractories for High Temperature Zones  
of Rotary Cement Kilns*

**MAGNECON—THERMAG—MAGNEX**

### *Leading High-Alumina Brands*

**ALUSITE 70% Alumina**  
**ANCHOR 60% Alumina**  
**CORALITE 80% Alumina**

**LOTHERM**—The high strength insulating brick specifically developed for use in the preheating zones of rotary cement kilns, provides durable insulating linings for direct exposure to the prevailing kiln conditions.

Various high duty and super-duty fireclay brick brands of superior quality are available from plants which afford lowest transportation costs—Pennsylvania—Missouri—Ohio—Alabama—Texas—Kentucky—Maryland.

—and the outstanding abrasion resistant refractories—**DURO** and **WYLAM A**.

—as well as all classes of Plastic Fire Brick, Castables for use in coolers, hoods and around chain holders, Mortars and Cements and Insulating Refractories.

## **HARBISON-WALKER REFRACTORIES COMPANY**

AND SUBSIDIARIES

**World's Most Complete Refractories Service**

**General Offices, Pittsburgh 22, Pennsylvania**

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ROCK PRODUCTS, May, 1958

139



**B-60 SERIES**—All-around workhorses for construction jobs everywhere. B-60 four- and six-wheel chassis are available for dumpers, concrete mixers, equipment hauling tractors, and flat-bed trucks... powered with Mack Thermodyne® gasoline or diesel engines in the 170 or 205 horsepower range.



**B-80 SERIES**—Largest and most powerful highway and off-highway chassis in the Mack line. B-80 tractors for heavy carry-all trailers and B-80 truck chassis for mixers and dumpers are available in four- or six-wheel models... powered with 170 to 205 hp Mack Thermodyne gasoline or diesel engines, or stock diesels in the 250 to 300 horsepower class.



**B-40 SERIES**—Widely popular for maneuverability and rugged strength. B-40 four- or six-wheel dumpers, mixers, flat-bed trucks and tractors are especially valued for their bonus capacities, economy, and handling ease. Powered by Mack 150 hp Thermodyne diesel or Magnadyne gasoline engines.

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## Most in demand... for the most demanding jobs

For dump, mixer, or flat-bed truck service in highway and off-highway hauling, Mack large-capacity trucks and tractors will do your toughest, most demanding jobs more efficiently, more economically, and more profitably. More, Mack offers you the widest selection of heavy-duty units with gross vehicle weights ranging from 25,000 to 65,000 lbs. and tractors for carry-all trailer service up to 175,000 lbs. G.C.W.

Have your local Mack representative give you complete details and specifications. Mack Trucks, Inc., Plainfield, New Jersey.  
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# MACK

first name for

# TRUCKS

4839



*In 24 month period...*

## CEMENT INDUSTRY SELECTS WESTERN PRECIPITATION **THREE-TO-ONE**

**THAT'S RIGHT**—during the most recent two-year period for which figures are available, 75% of all dust and fume control systems installed by the cement industry was Western Precipitation equipment... 25% was divided among all other suppliers. *That's a preference of three-to-one for Western Precipitation over all other makes combined!*

But, impressive as such numerical leadership is, this is only one facet of the whole story. The industry has also entrusted to Western Precipitation know-how the solution of dust control on a wide range of new cement plant advancements...

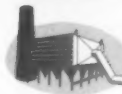
- ✓ COTTRELL Precipitators on a unique new application employing water conditioning for pre-treating the dry kiln gases!
- ✓ COTTRELL Precipitators on the nation's first A-C-L Process!
- ✓ First two-stage COTTRELL Precipitator installation on the new Fuller-Humboldt Preheat system!
- ✓ North America's first installation of selenium rectifiers on COTTRELL Precipitators in a cement plant.
- ✓ Two installations of COTTRELL Precipitators on a new recovery process using sludge from lime processing plants!

*Wherever dust control problems arise—whether on new or old processes—the industry thinks FIRST of Western Precipitation Corporation.*

The cement industry is doing an outstanding job of pacing its expansion to keep ahead of demands. We of Western Precipitation are proud to be a part of this program—and are deeply appreciative of the three-to-one preference the industry has shown for Western Precipitation equipment in its current expansion operations.



**75%**  
FURNISHED BY  
WESTERN  
PRECIPITATION



**25%**  
ALL OTHERS  
COMBINED



WESTERN  
**PRECIPITATION**  
CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries  
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Precipitation Company of Canada Ltd., 8285 Mountain Sights Avenue, Montreal 9  
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ROCK PRODUCTS, May, 1958

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Two shovels keep haulage trucks busy hauling rock to crusher

## Turns hill into roadbed

*continued from page 138*



Drilling goes on continually to keep ahead of the crusher

clay overburden, and let themselves in for some sticky problems.

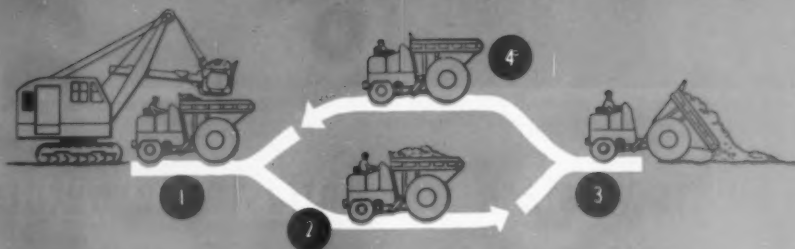
When Quarve and Anderson first arranged with the state highway department to produce the roadstone, they had a normal crushing setup that works beautifully on most materials. But the clay, which caused minor difficulties when it was dry, caused major ones whenever one of Minnesota's frequent summer torrential rainstorms hit the area. Then production dropped from several hundred tons per hour to less than one hundred, as the drenched clay squished through the machinery, clogging it up. The resulting mess usually took a day or two to clean up and it required a period of very brisk overtime work to dig out the equipment and catch up on tonnage lost by the delay.

**Eliminating the clay.** To correct this trouble, and to make sure they met their 60-day deadline, Quarve and Anderson purchased an impact crusher with an integral wobbler feeder. Since a whopping 10 to 30 percent of the feed is minus 2-in. clay, shale and broken stone, a combination often ruinous to equipment, the wobbler is particularly helpful on this job. It lets this difficult material drop through the rotating elliptical bars to the belt under the crusher. The self-cleaning feature of the wobbler makes it especially valuable to the company, and it helps to keep the soft material from clogging the crusher. Thus the crusher handles only oversize rock; no power is wasted working on clay. The hammer rotors of the crusher are driven by a pair of 200-hp. diesel engines belted together. But the wobbler feeder's elliptical rolls are driven by a separate 15-hp. variable speed

*Please turn to page 146*



## How to haul without turning:



Shuttling between loading unit and dump area, Koehring® 6-yard Dumptor® travels round-trip *without turning*. It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

### Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical

1. Dumptor gets load, with body forward in travel position.
2. Pulls away from shovel, body forward, ready to dump.
3. Dumps in one second — ready to shuttle back for next load.
4. Returns to shovel in high gear — all without turning.

1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return, its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

*Gravity-dumping* cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard

load in *one second*. Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor advantages mean in increased production, lower costs on your work. Call your Koehring Distributor or write for more information to:

KOEHRING DIVISION of Koehring Company, Milwaukee 16, Wisconsin  
K815

**KOEHRING®  
DUMPTOR®**



½-YARD TO 3-YARD SHOVELS • 10-TON TO 95-TON CRANES

ROCK PRODUCTS, May, 1958

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143



Lima Austin-Western 111 Crushing and Screening Plant, owned by Ronald Weaver, Dansville, Mich. High-grade specification material is being produced at an average rate of 1000 cu. yd. per 9 hr. shift.

## "Lima Austin-Western will outlast and outproduce"

*Says Ronald Weaver*

Ronald Weaver, Dansville, Mich., has owned and operated a Lima Austin-Western 111 Crushing and Screening Plant since January, 1953. With his 4-man crew, he works all year 'round, producing specification material meeting county and State requirements.

Mr. Weaver says: "I have owned and operated other plants, and I am convinced that over a period of time a Lima Austin-Western will outlast and out-produce other comparable machines. I depend on this plant to show a reasonable profit, and it has produced all that can be expected.

"It is truly a portable machine. Not long ago I moved the 111, power plant, feeder, two dump trucks,

dragline, bulldozer and other miscellaneous equipment 20 miles. The time involved in dismantling the equipment, loading, setting up, and resuming operation was only 3 hours.

"The quality of the equipment is shown by the fact that it has never required a major overhaul since it went into operation 5 years ago. But the most obvious reason for buying and using Lima-Austin-Western is the fine relationship and cooperation between not only the dealer and the operator, but more important, the manufacturer, the dealer and the operator."

Get the high-tonnage, low-cost Lima Austin-Western story from your nearby distributor . . . or write direct.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

**LIMA AUSTIN-WESTERN**

Crushing, Screening and Washing Equipment

**BALDWIN · LIMA · HAMILTON**

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

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**HOW  
A U.S. HOFFMAN  
STATIONARY  
VACUUM CLEANING  
SYSTEM  
CONQUERED  
COSTLY  
CEMENT DUST  
PROBLEMS**

HOFFMAN  
INSTALLATION  
PAYS ITS WAY AT THE  
LOUISVILLE CEMENT CO.



**before**  **after**

a U.S. Hoffman stationary vacuum cleaning system was put into operation at the Louisville Cement Co., plant in Speed, Indiana, these were among their cement dust problems:

- 1—Considerable spillage occurred in loading with little or no salvage.
- 2—Three to four men were required to clean up hopper cars after a day's loading.
- 3—Broom sweeping wasted usable cement and created a health and safety hazard.
- 4—Efficiency was impaired by poor housekeeping resulting from dust ridden plant area and RR sidings.
- 5—Manual removal of cement from overloaded hopper cars and trucks caused costly delays.

Hoffman INDUSTRIAL VACUUM SYSTEMS

the installation of the U.S. Hoffman stationary vacuum system efficiency was increased 100% and these material, time, and labor savings took place:

- 1—Cement previously lost in spillage was reclaimed as a saleable product.
- 2—One man and a U.S. Hoffman stationary vacuum system handled the entire cleaning job.
- 3—End to broom sweeping eliminated health and safety hazard, saved cement.
- 4—Improved housekeeping at RR sidings and in plant area increased efficiency and production.
- 5—Savings resulting from speedy vacuum system removal of excess cement alone more than paid for the installation within a year.

Custom Designed For Your Needs

U.S. Hoffman air appliance engineers will be glad to make a survey of vacuum cleaning possibilities in your plant. No obligation of course. Write for Catalog AB-100.

**AIR APPLIANCE DIVISION U.S. HOFFMAN MACHINERY CORPORATION** 103 FOURTH AVENUE, NEW YORK 3, N. Y.

Other industrial equipment — PNEUMATIC CONVEYING DIVISION — Custom Built Systems —

INDUSTRIAL FILTRATION DIVISION, Machine Tool Coolant Clarifiers — Solvent Recovery Systems — Oil Conditioners.

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ROCK PRODUCTS, May, 1958

145



Another load about to be dumped into the crusher

Specification roadstone pours into one of the company's fleet of bottom-dump trailers



## Turns hill into roadbed

*continued from page 142*

drive to keep the volume of feed always up to the peak capacity of the crusher.

The speed and reliability of the wobbler-impact crusher combination, which turns out about 400 tph. rain or shine, has been a major factor in Quarve and Anderson's swift completion of the roadstone contract. Its potential is limited only by the ability of the secondary crushing and screening equipment to handle the mixture of crushed stone and clay.

**The screening operation.** All material, crushed and uncrushed, is taken to a movable screening plant, where the plus 1½-in. material is scalped off and sent to the secondary hammermill crusher.

From there it returns in closed circuit to the screen. All equipment used in the company's operation has the advantage of being either portable or movable—even the impact crusher, the bins, conveyors and diesel engines.

Material is taken out of the plant in a fleet of bottom-dump trailers. Four are 14-ton units the firm bought for the job, and six are 11-ton units made by Quarve and Anderson's own welders in their fabricating shop near Rochester, Minn. These hand-fashioned tank-type trucks incorporate many special features applying to the company's specific needs. The rugged, heavy-duty trailer bodies can be filled quickly from the four gates in the field hopper, and can spread material rapidly on the sub-base. All trucks are weighed immediately after loading, before high-balling to where the base is being made.

### MAJOR EQUIPMENT USED BY QUARVE & ANDERSON CO.

Shovels (3)	Link-Belt Speeder Corp.
Trucks (3) Dumpsters	Koehring Co.
Impact Master crusher and	
Wobbler feeder	Universal Engineering Corp.
Belt idlers, Limberoller	Joy Manufacturing Co.
Belt conveyors, bins, hammermill, and	
vibrating screen	Iowa Mfg. Co.
Diesel engines (2) D17,000	Caterpillar Tractor Co.
Trucks (10)	International Harvester Co.
Truck bodies (4)	Omaha Standard, Inc.
Bulldozer	Caterpillar Tractor Co.
Compressors (2)	Ingersoll-Rand Co. Joy Mfg. Co.
Drills (2)	Gardner-Denver Co. Joy Mfg. Co.
Generator	General Motors Corp.
Scale	Thurman Machine Co.

END

# NEW SLIDE RULE

## Free



## gives you CRUSHER CAPACITIES and a SCREEN ANALYSIS of the crusher product

● For the first time—a handy slide rule with all the information you need to select the right crusher or crushers for your particular requirements. It gives the capacity for all sizes of Telsmith Jaw, Gyratory, Gyrasphere, and Intercone Crushers. It shows a Screen Analysis of the product from each of these crushers when set with any proper discharge opening. It will help you pick and buy the best and most economical type and size of crushers for your aggregate plant, or mill. No more reading complicated charts or tables. Here's all you need—in quick easy-to-read form.

### HOW TO GET YOUR SLIDE RULE

A request to Smith Engineering Works, Milwaukee 1, Wisconsin—or to your Telsmith distributor—on your letterhead, stating your position, will bring you a slide rule with the compliments of Telsmith.

SR-1

## SMITH ENGINEERING WORKS

508 E. CAPITOL DRIVE

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The third dredge belonging to Cooley Gravel Co. A  $3\frac{1}{2}$ -cu. yd. walker, right, with a 100-ft. boom digs out the black, sticky clay and dumps it into the grizzly

## A dredge of ideas

Cooley Gravel Co.'s new dredge features ingenious innovations in sand and gravel processing

By WALTER B. LENHART

**F**ORCED BY DECLINING GRAVEL supply to locate its latest dredging operation in a marginal deposit near its consumer market, Cooley Gravel Co. of Denver has come up with a number of innovations worth recording. The story of "Gravel Gertie III," as the new dredge is called, is characterized by the same sort of inventiveness that has been a Cooley byword since its first sand and gravel plant was established more than 30 years ago.

This plant, near Littleton, Colo., 10 miles south of Denver, is similar in operation to Gravel Gerties I and II, insofar as all are Cooley-designed units based on experience in the sand and gravel business in Indiana, Missouri and Louisiana, plus gold



One of the company's ideas was this 12 ft. diam. sand drag for primary concrete sand recovery

dredging in Montana and Colorado. Each employs a dragline with a long boom as a digging unit. Stacker belts extend out over the left side of the floating plant and from the conveyors of different lengths three or more "windrows" of processed sand and gravel are built up. To counterbalance the weight of the long conveyor systems, the designers placed crushing equipment on the opposite side of the boats.

However, the differences between this third dredge and the other two are what make it unusual. A distinctive feature of the company's first dredge is that it recovers enough gold to help pay operating expenses. The second dredge uses electrically heated screens as a part of the gravel preparation ahead of the Gyrodisc crusher that is used to manufacture sand from "Bird's Eye" and pea gravel. (These plants were described previously in *ROCK PRODUCTS*—March, 1953, p. 94, and

Please turn to page 150



# Here's how Illinois Gear makes sure of Quality in HERRINGBONE GEARS

If you could look down into the ILLINOIS GEAR plants you would see great batteries of the world's most modern gear producing equipment . . . manned by skilled craftsmen who know how to operate this equipment:

Typical of what you would see is the precision Herringbone Gear Generator and Testing Equipment, illustrated here. With unmatched facilities such as these ILLINOIS GEAR can produce one gear, ten thousand or more under the most exacting conditions of quality control . . . and meet delivery dates as promised.


If you are not now using ILLINOIS GEARS find out about the gears that can be made in any quantity with quality as the first consideration, as thousands of customers can testify.



Power testing Herringbone Gears under actual operating conditions.

The Herringbone Gear Generator has a 66" diameter and 18" face capacity. Other generators up to 134" diameter, 54" face capacity.



Look for this mark  the symbol on finer gears



*Gears for Every Purpose ... one gear or 10,000 or more*

## ILLINOIS GEAR & MACHINE COMPANY

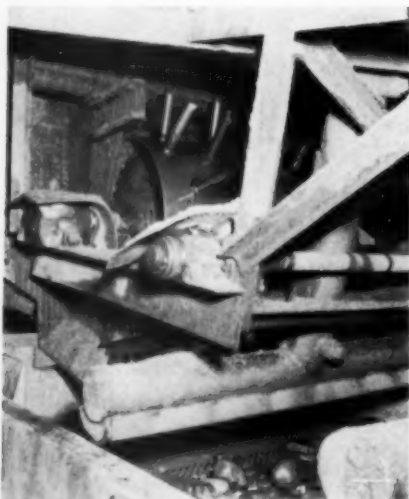
2108 NORTH NATCHEZ AVENUE • CHICAGO 35, ILLINOIS



These four stacker belts are located on the left side of the boat

## A dredge of ideas

continued from page 148



Another of Cooley's ideas: a spoked, drum-type feeder which pulls out the sticky lumps of clay from the gravel

February, 1956, p. 52, respectively.) The third dredge was designed to cope with a black, sticky, gumbo-type clay with flat lenses of this material in the pit (and below water) in beds up to 4 ft. thick. The company's chief engineer, Orville Enderud, worked with Cooley personnel in design and construction of the dredge under the direction of C. G. Cooley, president.

Digging is done by a  $3\frac{1}{2}$ -cu. yd. walker with a 100-ft. boom. Conventional types of feeders would not handle the clay when encountered, so a "Cooley" feeder was invented. This is a drum-type feeder roughly 2 ft. diam. with a 3-ft. face. On the face of the drum are spot welded a large number of steel pins or spikes, 1-in. diam., extending out about 6 in.

The feeder drags the material to the 5 x 16-ft. primary three-decked screen. Only two of the decks are used; three sizes of sand are screened out by the lower deck and some of the sizes are wasted or sent to the sand recovery unit. The top deck is 2 in., so the  $\frac{1}{4}$  x 2-in. material goes directly to a large rotary scrubber. At the discharge end of the scrubber two trash-remover spirals prepare gravel in two sizes, and the washing and scrubbing in transit are sufficient to remove clay in those sizes.

The handling of the plus 2-in. gravel and its heavy clay load at the primary screen is another matter, and here is another of the novel features of this plant—a traveling chain link grizzly. Installed at the end of the primary vibrating screen to carry all clay balls or chunks too large to pass through its 7-in. square openings, the chain has links 16 in. wide x 8 in. pitch. The center-to-center length of the chain assembly is short, about 8 ft. long, and the chain is installed at right angles to the long axis of the screen.

When the clay digging is bad, this grizzly performs a real service. The large clay balls and plus 7-in. rock not passing through the openings are unloaded to a conveyor that dumps them back into

Please turn to page 158

# specification sand production in the Japan Alps

**four Dorrco Jet Sizers  
process 690,000 tons  
for new dam construction**



Sizer operation was proven out successfully in this pilot plant.

The Kansai Electric Power Company has recently started construction of the new Kurobe No. 4 Dam on the Kurobe River, Toyama Prefecture in the heart of the Japan Alps.

The 192 meter high dam will require for completion a total of 690,000 metric tons of specification sand, all of which will be processed by four 16½ pocket Dorrco Jet Sizers. Feed to the units consists of 200 metric tons per hour of river sand and manu-

factured sand. Accurately sized products down to 200 mesh are dewatered and blended to a fineness modulus of 2.51.

The overall low operating costs — particularly the more effective hydraulic water utilization inherent in the Dorrco Jet Sizer — render the unit ideal for operations in relatively remote areas such as the Kurobe Dam installation.



For complete information on this most effective tool for concentration and sizing of 8 mesh and finer particles in the metallurgical, chemical and non-metallic fields, write for a copy of Bulletin No. 2342. Dorr-Oliver Incorporated, Stamford, Conn.

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## Ag-lime field needs: Aggressive promotion, uniform standards

**J**UST RECENTLY George C. Lindsay, Editor of ROCK PRODUCTS discussed some of the problems of the Agricultural Limestone industry with J. L. Morrow, an Extension Agronomist with Purdue University. The following article is taken from their discussion.

**Mr. Lindsay:** We all know that the limestone industry produces a valuable and needed product, essential in the efficient production of crops in this country. What changes in the present methods of producing and promoting the use of agricultural limestone would the average producer and the whole industry have to make to operate at a reasonable profit if there were no Agricultural Conservation Program?

**Mr. Morrow:** I feel that there are two parts to this problem: One is the need for a product of "standard" or uniform quality. The other is intelligent promotion, which some call "customer education;" others, just plain advertising. By whatever name, it is effective when it causes a potential customer to buy. For the producer who wants to make

a continuing customer and who wishes to keep the asset of his good will, supplying him with all the quality possible becomes imperative in a competitive field. In Indiana there are now numerous producers of ground limestone who were not in the business before ACP started. Agricultural scientists and extension workers have been advocating the use of more limestone on the land, and there were some producers who actually worked at selling their product. When ACP made it easy for the farmer to get limestone applied on his land a sudden large increase in demand occurred. Advertising by the producer was not particularly necessary. The demand was largely the result of a combination of stimuli originating outside the industry. The business was there if the producer could fill the orders. Under these conditions it was not too difficult for one producer to sell for the same price a material of lower grade than that offered by another producer.

The business of processing and selling limestone has now become more competitive, the economic situation of the farmer has become tighter, but the agricultural limestone industry will always have a future since to be productive the soil will always need additional amounts of limestone. Individual producers in Indiana are even now selling a large percentage of their total volume direct to farmers without ACP promotion.

**Mr. Lindsay:** Can you tell us more about the need for a more uniform standard of quality? How does this fit into the proposed requirement of 25 percent passing through 200 mesh for agricultural limestone?

**Mr. Morrow:** Well, first let me explain that there are two major functions of ground limestone in the soil. One is to satisfy plant needs for calcium and for magnesium. The other is to neutralize soil acids to provide the "sweet" soil in which most farm crops grow best. Limestone can do these jobs only when it has become dissolved in soil water, but its effectiveness depends upon the acid level of the soil, the amount of organic matter and clay in the soil, the neutralizing effect of the stone and its particle size.

Particle size is the one factor which determines the surface area in a given volume of stone which is exposed to the dissolving action of water. For

*Please turn to page 154*



# CONSTANT QUALITY CONTROL

is the reason why MAGNECON® is acknowledged as the leading hot zone refractory for rotary kilns all over the world.

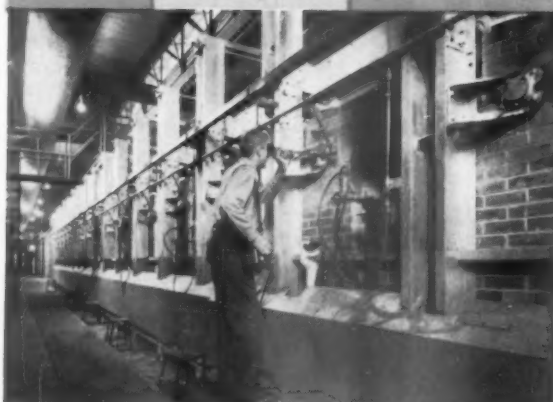
Magnecon®—a true product of scientific refractory research—is subject to 24-hour chemical and mechanical tests at the mine and plant of CRL. For instance:



Experts operate the brick presses. Samples of the brick are analyzed regularly to insure complete uniformity.



Engineers check the selection, mixture and density of the clinker. A similar close watch is maintained at every stage of the manufacturing process at CRL's Maréchal plant.



Optical pyrometer readings double-check the automatic temperature controls regulating the kiln operations at the CRL plant—the world's most modern refractory plant.



Scientific tests are conducted in the completely equipped CRL plant laboratories. Here, the unique properties of Magnecon® were first developed.

For a hot zone refractory that will build up and hold a sound coating—give you more production and greater economy—you can rely on MAGNECON®

## CANADIAN REFRACTORIES LIMITED

CANADA CEMENT BUILDING, MONTREAL, CANADA



**"The limestone producer can help in an education campaign on an individual basis using his own techniques to reach the farmer."**

## Ag-lime interview

*continued from page 152*

example, a cubic foot of stone in one piece provides 6 sq. ft. of surface exposed to water action. If reduced to particles whose cubic dimensions were  $\frac{1}{8}$  in. the exposed surface area would be increased to 576 sq. ft. You can see that if the particle size were reduced to  $\frac{1}{32}$  in. the total exposed surface for the same cubic foot of stone would increase to 2,304 sq. ft. The surface doubles each time the dimension size is halved.

The fineness of ground limestone is measured by screen tests. Any crushed stone passing through a given screen size has a lot of material that would pass through finer screens. As stone is ground to pass through a finer screen, not only is the average particle size reduced, the amount of fines is increased and the effective surface area is vastly increased.

Increasing farmer objection to coarse material is not making it any easier for those outside the industry to advocate the use of limestone of indiscriminate grades of fineness.

Because of lack of uniformity in fineness of material now being offered by different producers in our state, and because of farmer dissatisfaction with the coarseness of stone produced in some areas, ACP asked Purdue University to recommend fineness of grinding standards for agricultural limestone in Indiana. Keeping in mind the results of research work on the effects of different fineness of limestone in correcting soil acidity, the recommendation was made that limestone should be ground to pass 40 percent through a 60-mesh screen.

Some producers complained that this standard was too tight, and officials of the producers associations voiced their objections. Privately several producers reported that this standard would work no hardship on them because they had been meeting it all the time with the previous standard of 90 percent through 8-mesh.

Our research people see no necessity for grades finer than 40 percent through 60 mesh if the other 60 percent consists of the sizes immediately above the 60 mesh produced in the same operation.

There has been agitation by farm organizations

for legislation to regulate the grades of ground limestone offered for sale. If producers and the industry among themselves would do their own regulating on a basis satisfactory to the consumer and the public, this would seem to be a much more desirable solution. The producer who has been taking everything too fine to meet roadstone and industrial specifications and lumping it into agricultural stone would have to make some adjustments. This would be good for the industry.

**Mr. Lindsay:** Now when you say 'satisfactory to the consumer', aren't we getting right back to the problem of customer acceptance?

**Mr. Morrow:** That's just what I have in mind. It is a matter of satisfactory relations with the customer—the farmer who uses the product, agricultural limestone.

We have had several instances where the farmer had his soil tested and placed an order for stone to supply the indicated amount of lime, and the producer supplied material with a large percentage of fines, well below the limits which are recommended. However, two or three years later the farmer tests his soil and discovers that he still needs almost as much limestone. Justifiably he is puzzled—often disgruntled. He had applied the amount he had needed, but finds he needs to do the same thing with a repeated cost. Why? Because due to coarseness of a large fraction a 4-ton application had a neutralizing potential of only two tons.

In the meantime he lost an alfalfa seeding because the soil was too acid. Who is he sore at? The laboratory? The stone producer? Probably both. But the fact remains that in the long run he is the man whom both the laboratory and the producer must satisfy if laboratory tests are to have any meaning to him and if the producer continues to get his limestone business. As this question of fineness is resolved on the basis of mutually agreed upon standards, producers of ground limestone will benefit. The consumer will be happy, he can see larger benefits, and will con-

*Please turn to page 168*



## Stop pickpocket power by repowering when necessary

**Call your International replacement engine specialist when you first need a new engine and save three ways**

You're paying for repowering without getting it, if over-age, power-puny engines in your equipment are picking your pockets of excessive maintenance and operating costs.

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Call your International power unit distributor or dealer for your free repower estimate the moment you decide to stop supporting pickpocket power.



New 300 hp max. output capacity UDT-1091 Turbo-Torque diesel is the largest of 21 dependable, economical repower choices available in the International line. Power range: 16.5 to 300 maximum hp with your choice of fuel.

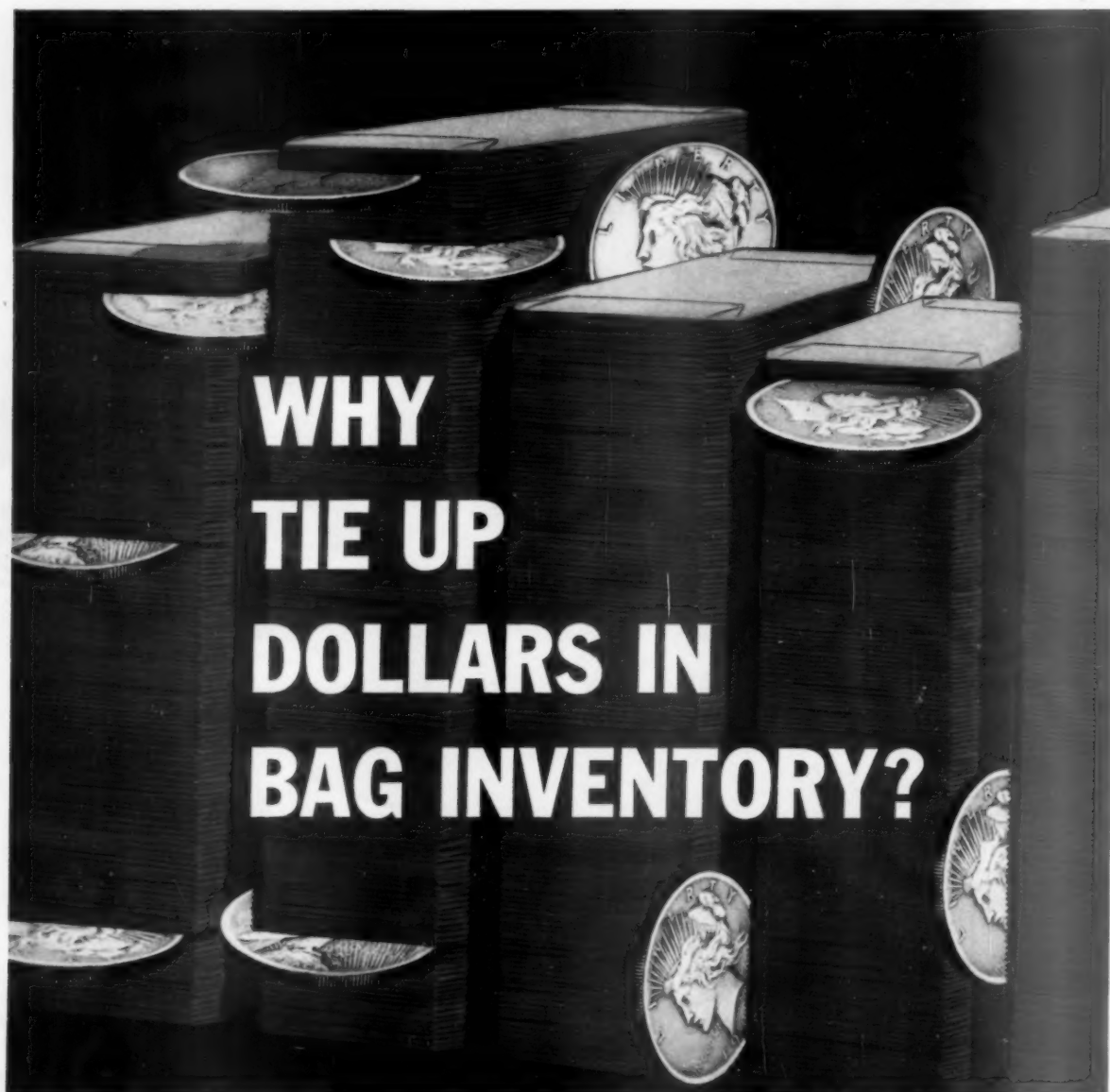
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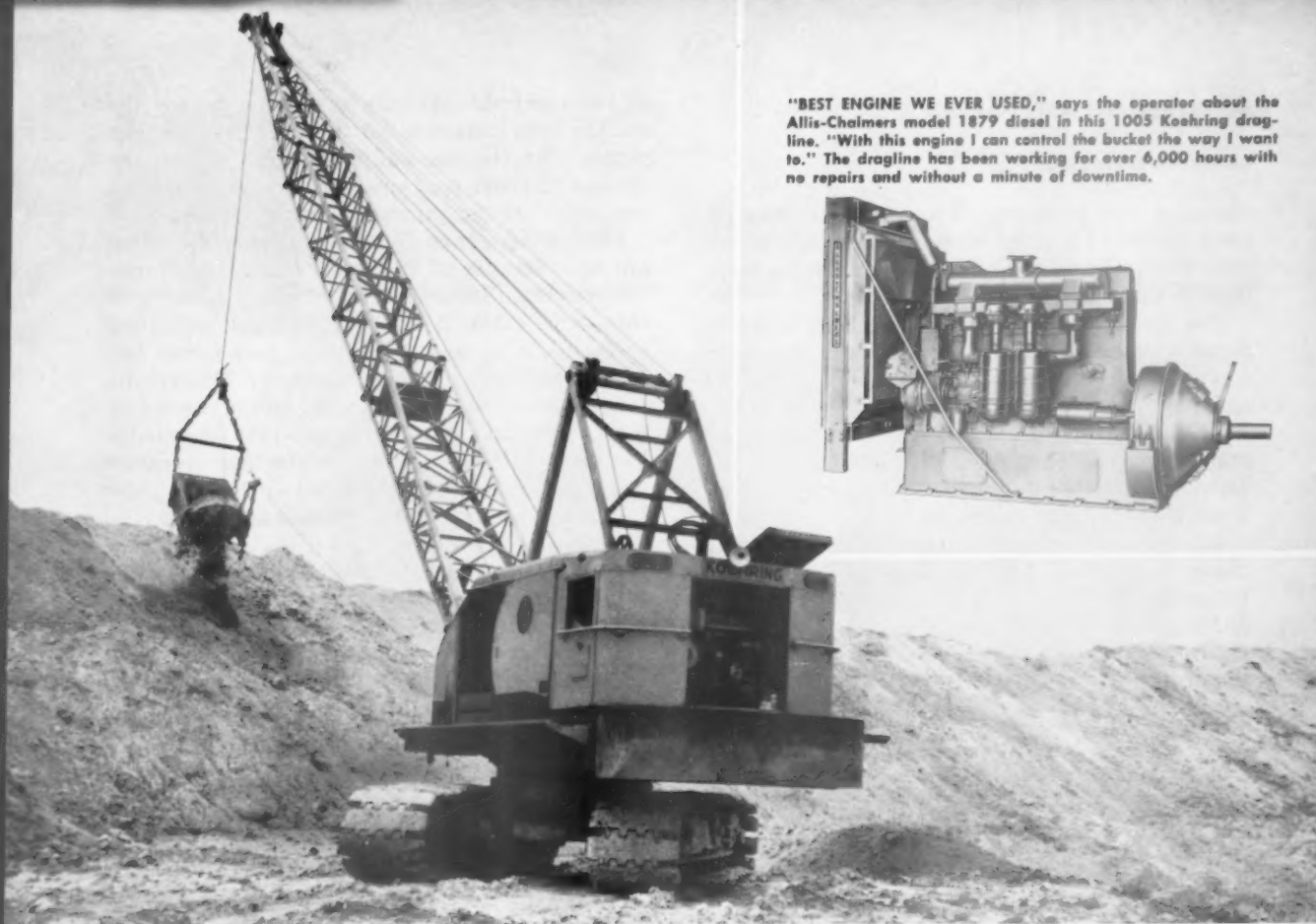
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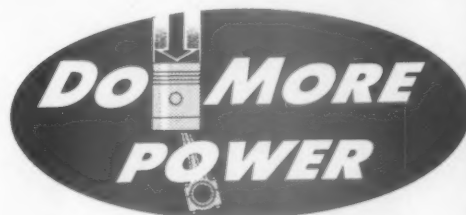
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"BEST ENGINE WE EVER USED," says the operator about the Allis-Chalmers model 1879 diesel in this 1005 Keshring dragline. "With this engine I can control the bucket the way I want to." The dragline has been working for over 6,000 hours with no repairs and without a minute of downtime.

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**That's RIGHT for your needs**

**RIGHT PERFORMANCE** — Allis-Chalmers engines have *Do-More Power* — high torque, maximum work for each operating dollar.

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See your Allis-Chalmers dealer for full details on *Do-More Power* engines that are right in every way for your job. Allis-Chalmers, Engine - Material Handling Division, Milwaukee 1, Wisconsin.

**ALLIS-CHALMERS**



## A dredge of ideas

*continued from page 150*

the pond. Any balls small enough to fall through are received by a short sorting belt where a lone workman picks up the remnants and chutes them back to the pond.

The dredge has four side-stacker belts and produces a concrete sand and three sizes of gravel:  $\frac{3}{4}$ -in. to No. 4;  $1\frac{1}{2}$  to  $\frac{3}{4}$ -in.;  $\frac{7}{16}$  in. to No. 4; and pea gravel that includes  $\frac{3}{8}$  to  $\frac{1}{4}$ -in. chips. Plus 2-in. gravel is crushed in a 4-ft. standard cone crusher, and after screening the three sizes are blended on the boat into the three gravel sizes. Total plant capacity is 300 tph.

At the start of operations a rotary trash remover was installed on the discharge end of the rotary screen with the idea that it would lift out and reject wood fragments. The unit rotated with the rotary screen. The device did not work because too much turbulence was present, but the present spiral trash removers do an excellent job.

A 24-in. diam. liquid cyclone is used to pick up added fine sand as required. The main sand recovery unit is a 12-ft. diam. inclined rotary sand drag, made by Cooley personnel.

The waste sand launder and cone crusher are

on the right side, helping to counterbalance the stacker belts extending out from the left side. The pontoons on the side and front are 5 ft. and the other, 4 ft. Extra pontoons were added at the front end under the big primary vibrating screen.

Furnishing power for the dredging operation are two batteries of 167 and 100-kva. transformers, connected from shoreline through 1,200 ft. of three-wire cable. A bank of 90-kvaR capacitors on the plant raises the originally poor power factor of 73 percent to above 91 percent. This results in more than \$90 a month saving on the power bill.

Since it began operation in mid-1957, the dredge has been enclosed to permit wintertime operation and a furnace has been installed so that the plant can be operated in weather as cold as 20 deg. F.

How does the Cooley Gravel Co. set up a new dredging operation? Before the third dredge was installed, the 300-acre tract was thoroughly prospected by drill holes and dragline excavations. The gravel was found to be 40 to 50-ft. thick and mostly below water. Since the matrix is roughly 60 percent sand and 40 percent gravel, a design was worked out so that excess sand could be wasted. It is wasted, however, in such a fashion that it will play an important part in the later rehabilitation of the worked-out area.

*Please turn to page 162*



**WRITE TODAY!** Bulletin 2254R-1 will help you select the proper bucket from the many different Blaw-Knox Clamshell Buckets available.

**BLAW-KNOX**

## Cut rehandling time and costs with Blaw-Knox two-line, lever arm type Clamshell Buckets

By matching the proper size, weight and type of Blaw-Knox Clamshell Bucket to the requirements of your rehandling job, you can increase crane output, slash bucket downtime and maintenance.

Blaw-Knox has the industry's widest range of Clamshell Buckets, each developed and built for peak performance in handling specific materials. And experienced engineering service is available to help you apply the right bucket to your crane handling operations.

### **BLAW-KNOX COMPANY**

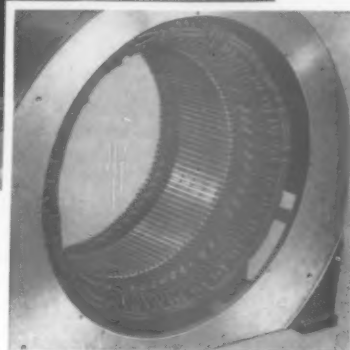
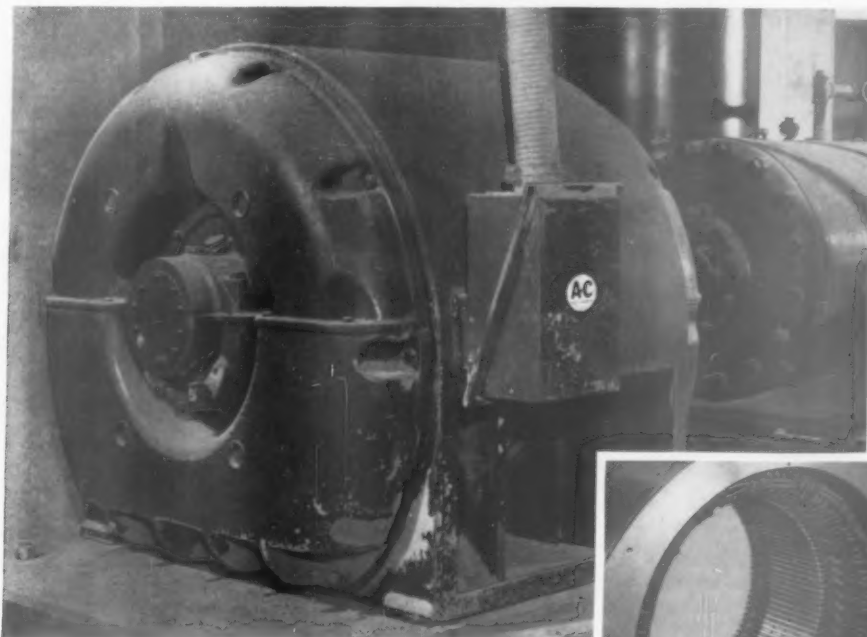
*Blaw-Knox Equipment Division  
Pittsburgh 38, Pennsylvania*

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# Super-Seal...

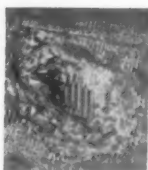
motor with void-free insulation



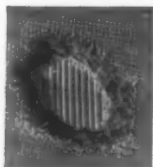
## The motor that dust and dirt can't hurt



*Silco-Flex*  
Insulation



Polyester  
Mica Tape



Asphaltum  
Mica Tape

### Note difference in abrasion!

Insulation shown after sandblasting for one minute with 90-grit aluminum oxide and 100-psi air from distance of six inches.

**R**EDUCE motor clean-up frequency and schedule this downtime at your convenience by using *Super-Seal* motors in areas where there's abrasive dust and clogging dirt. These motors —

**Resist abrasion:** Rubbery *Silco-Flex* insulation used in *Super-Seal* motors resists the cutting action of abrasive dust particles. Unlike conventional insulations, *Silco-Flex* insulation is flexible and resilient.

**Completely sealed:** *Super-Seal* motor insulation is sealed against contaminants. The vulcanized void-free dielectric barrier of *Silco-Flex* insulated stator coils even resists penetration by carbon black particles.

Combined with void-free *Silco-Flex* insulation are integrated mechanical features that make this motor especially suited to your toughest applications.

**Get details!** Call your nearby A-C office, or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wisconsin.

*Super-Seal* and *Silco-Flex* are Allis-Chalmers trademarks.

# ALLIS-CHALMERS




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ROCK PRODUCTS, May, 1958

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**You'll want  
this new  
SCREEN  
CATALOG**

**DEISTER  
VIBRATING  
SCREENS**

**DEISTER MACHINE COMPANY**  
1933 EAST WAYNE ST., FORT WAYNE 4, INDIANA

## showing the entire line of Deister Vibrating Screens

This new, illustrated, 16-page Screen Catalog gives complete, detailed descriptions and specifications for the entire Deister line of Type UHS, ETU, USL and UF Vibrating Screens.

Look over the catalog and you'll see why Deister Screens, designed to fit each specific job, *deliver* day after day, year in and year out, with unmatched precision performance. These big capacity, cost cutting, hard working screens are shown in a variety of sizes and models . . . for your guidance in selecting the screen or screens to do your particular job *best*.

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tions and produce top tonnage without constant attention or maintenance.

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machinery for the mining and  
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# TRUE WHAT ARE YOUR <sup>^</sup> BLASTING COSTS?



**Get a complete profit picture with new,  
free Blasting Cost Chart! Let the Atlas Man show you how**

Explosives costs alone don't always determine value of a blast. The explosives used have a direct effect on drilling, digging, hauling and crushing costs. Now, a free, simplified computing method—developed by Atlas, gives you a true, complete cost analysis of profits, without involved bookkeeping.

The Atlas Blasting Cost Chart enables you to protect or improve your profits. What's more, it's yours without cost and you can keep your figures confidential. The Atlas representative nearest you will be glad to show you how it works—without obligation.



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DIVISION  
**ATLAS**  
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WILMINGTON 99, DELAWARE *offices in principal cities*

**80% fewer pieces**

**in this Plibrico cooler  
arch nose**



**.... and wherever installed  
Plibrico linings are equally simple**

Simplicity . . . that's the key to the durability of a Plibrico lining. That's why it's so easy to repair when needed, too. Think it over: the more complex you make anything, the greater are the possibilities of failure and the more difficult it is to repair. Plibrico lining simplicity shows itself in the clinker cooler arch nose illustrated.

Here's how this Plicast formed area compares to ordinary tile construction:

Plibrico Lining	Ordinary Lining
6 pieces, steel	9 pieces, steel
10 anchors	18 support castings
1 piece refractory	58 pieces, tile
17 pieces . . . TOTAL . . .	85 pieces

*Simplicity applies to all Plibrico linings. See how you can benefit from Plibrico construction by writing today for our catalog covering linings for calcining, drying, and processing furnaces.*

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## A dredge of ideas

*continued from page 158*

Knowing that extreme clay conditions would be met, the company first built a shore-based pilot plant of modest capacity. They dug and desanded the material, using a floating dragline type gold dredge which deposited the sand on the bottom and the plus 5/16 in. rock on top, then trucked rock to the pilot plant. The dredge was designed from the information gained. As the clay, when dry, would disintegrate and fall away from the gravel, the land-based pilot plant used a dry rotary scrubber. Overburden was about 3½-ft. thick, but water was so close to the surface that high capacity pumps had to dewater the area before stripping.

As a prelude to all dredge work, stripping is currently being done with a new type of carryall, described in detail in the December, 1957, issue of *ROCK PRODUCTS*, p. 78. The outstanding feature of the carryall is its ability to load and haul 8 cu. yd., using a small farm tractor to pull it.

Cooley's care in conducting digging operations so that attractive landscaped areas will be left after gravel is extracted is part of its public relations program. This company is active in promoting the cause of gravel deposit conservation for gravel production. Inception of its first dredging operation and zoning permission to operate it a short distance from downtown Denver stemmed from its careful planning.

Looking after the company's sand and gravel operation is C. G. Cooley. His brother, L. M. "Dee" Cooley, takes care of their coal mining interests. Bill Adams is superintendent of the new plant and Gene Weinlinger is general superintendent of all three plants.

### MAJOR EQUIPMENT USED BY COOLEY GRAVEL CO.

Walking dragline	Bucyrus-Erie Co.
Hopper	Bodinson Mfg. Co.
Rotary scrubber	
Rotary feeder	Cooley Gravel Co.
Chain grizzly	
Picking belt	Iowa Manufacturing Co.
Rotary sand drag	
Vibrating screens, Cedarapids	Iowa Manufacturing Co.
5 x 16-ft. triple-deck	
4 x 14-ft. triple-deck	Link-Belt Co.
Conveyor idlers	
Conveyor belts	Goodyear Tire & Rubber Co.
Sand Pump	United Iron Works
Classifier, DorrClone	Dorr-Oliver Co.
Crusher	Nordberg Manufacturing Co.
Truck loader	Pettibone Mulliken Corp.
Scales	The Webb Corp.

END

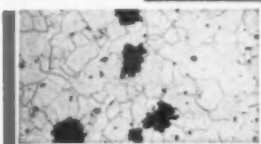
MINERAL OUTPUT in the United States attained a record value of \$18.3 billion in 1957, a gain of more than \$750 million over 1956, according to Secretary of the Interior Fred A. Seaton.

# Link-Belt Promal chain specified to resist heavy loads and abrasive wear



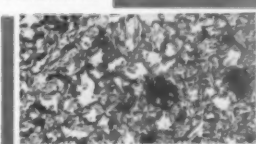
**GREATER WEAR RESISTANCE** of Link-Belt H-Class Promal Drag Chain has been proved in grueling conveying service under severely abrasive conditions. Promal's extra strength provides low-cost, long-life performance where ordinary chains fail.

## MALLEABLE



**MICROPHOTOS** show difference between ordinary malleable iron and Promal. Left—white areas in malleable microphoto represent "free iron" . . . black shows soft nodules of carbon. Right—dark areas in Promal structure show stronger, stiffer reinforcing material which strengthens metal; resists distortion, wear.

## PROMAL



Specially heat-treated malleable iron provides extra wear resistance

Fewer conveyor shutdowns and minimized replacements are economies realized by users of Link-Belt Promal chain. Its greater strength absorbs continuous impact loads — and wear resistance supplies the durability to cope with severe abrasion.

Promal is more than a partially annealed or surface-hardened malleable iron. Developed by Link-Belt, this specially heat-treated malleable iron is actually transformed into a metal of radically different physical properties. Promal, because of uniform micro-structure throughout its whole section, provides greater ultimate strength, higher yield point, exceptional fatigue resistance and a remarkable capacity to withstand abrasive conditions.

For unusually abrasive or mild corrosive conditions, Promal chain can be furnished with "file-hard" surfaces. Copper bearing or special alloy content also available.



## Ley bushed chain withstands grueling service conditions

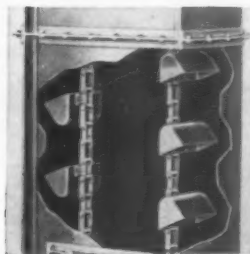
Rugged, reinforced cast links with renewable, hardened steel bushings on Link-Belt Ley Bushed chains minimize abrasive wear. Shields on integral sidebars deflect dirt and abrasives from joints. Steel connecting pins are also shielded — and locked against rotation. Heels on inside of links provide wear-resistant sliding surfaces and guide the chain onto the sprocket.

## How and where to apply Promal Chains in the Non-Metallic Industries

Choose Link-Belt Promal chains for highly abrasive conditions—for extra strength and wear resistance demanded by heavy loads or long, sliding conveyors. They last much

longer . . . cost but a little more.

The wide range of Link-Belt chains available in Promal includes all types of cast and combination chains.



**Class C** combination chain is one of the most popular types for general purpose elevator and conveyor service. The cast center links and steel sidebar combination forms a strong, rugged yet inexpensive elevating medium. Attachments are available for both cast center links and the steel sidebars so that desired bucket spacing may be accommodated.

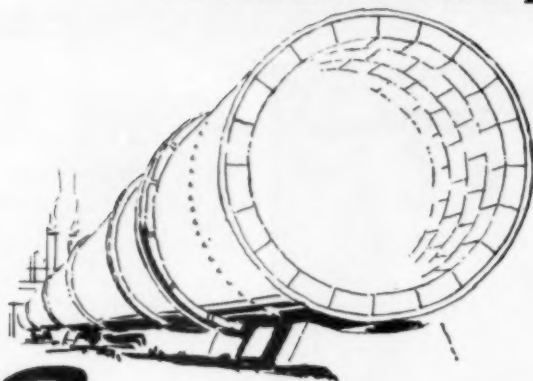
**HEADQUARTERS** for chains, sprockets and other Link-Belt conveying and mechanical power transmission products is your nearby Link-Belt factory branch store or authorized stock-carrying distributor.

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# LINK-BELT

CHAINS AND SPROCKETS

## For Higher Bulk Density ... Lower Porosity



### *Specify* **WALSH** **HIGH ALUMINA REFRACTORIES**

Higher bulk density and lower porosity are plus values in Walsh Hi-Lumite Refractories for the lime and cement industry. They result in increased strength, greater resistance to abrasion and improved non-spalling characteristics for better performance and longer service life at elevated temperatures. Carefully graded and selected minerals, noted for non-shrinking qualities, are further enhanced by dry press manufacture, imparting uniformity of size and shape. For the whole money-saving story contact your nearest Walsh representative or write us for details.

#### **WALSH HI-LUMITE 60 & 70**

(60% & 70% alumina content, respectively)—For high temperature and calcining zones in rotary cement and lime kiln linings.



#### **WALSH WARCO XXD FIRE BRICK**

(dry press process)—High Duty for cold zone—40% alumina for hot zone rotary cement kiln linings; also for lime kiln linings.



#### **WALSH MULLITEX D FIRE BRICK**

(super duty . . . dry press process)—For intermediate and transition zone liners in cement kilns, burning zones of some lime kilns.



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**REFRACTORIES CORPORATION**

101 Ferry Street • St. Louis 7, Missouri

Specialists in Refractories of High Bulk Density and Low Porosity  
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## Making cement with pellets

*continued from page 78*

from ambient temperature to about 500-600 deg. F. The air, now about 250 deg. F. and stripped of heat and dust, is exhausted to the atmosphere. A bank of mechanical dust collectors removes air-borne dust generated by the kiln, and returns the dust to the raw material system feeding the pelletizing pans. Any dust and fines which fall through the traveling grate are gathered with a drag chain conveyor, carried to the discharge end of the grate and elevated to the inlet end of the rotary kiln.

The 12½ x 160-ft. rotary kiln is of conventional design, but so much shorter than usual that it can be supported on only two sets of trunnion rollers. This design simplified the construction and alignment of the kiln, and eliminated maintenance problems arising from the adjustment of several sets of trunnion roller supports.

The pellets retain their original form throughout the length of the kiln and are discharged as pellets. This makes them easier to cool in the 6 x 100-ft. oscillating conveyor air-quenching cooler. Cold outside air is passed through the bed of hot clinker, heated and then used for secondary air in the rotary kiln, achieving another saving in increased efficiency for the system.

The pellets discharged from the clinker breaker at the end of the cooler are ready for grinding. They are taken to the existing grinding mills, which have the capacity to handle the increased production.

END



JUST WAIT UNTIL YOUR FATHER GETS HOME!

ROCK PRODUCTS, May, 1958





## How to get the Most Capacity from your Clamshell...

Clamshell and dragline operators report that when they install Yaun Buckets on their rigs, production often climbs as much as 20%. What's the reason? Having the right size and type bucket for each specific material is part of the answer... and there's a Yaun Bucket to match this specification. Yaun Buckets are designed for faster digging, cleaner dumping. They're conservatively rated. There's less downtime because all critical wearing points are engineered with an extra margin of strength and durability. All-welded construction gives strength without dead-weight. There's a big difference you can measure in yards of material moved per hour — and in lower costs, too!

Wouldn't this sound good to you? Talk over your bucket requirements with your Yaun Dealer. He will help you analyze your dragline and materials requirements, and recommend the size and type bucket you need.

Yaun Manufacturing Co., Baton Rouge, Louisiana.

### BACKED BY A NATION-WIDE DISTRIBUTOR ORGANIZATION

There are more than 150 Yaun Dealers located all over the U.S.A. — all ready to make early delivery on your Yaun Buckets — and stock an ample supply of parts.

# YAUN



**DRAGLINE  
BUCKETS**  
( $\frac{3}{4}$  to 40  
cu. yds.)



**CLAMSHELL  
BUCKETS**  
( $\frac{1}{4}$  to 15  
cu. yds.)



**CONCRETE  
BUCKETS**  
( $\frac{1}{2}$  to 2  
cu. yds.)

**THE BUCKET THAT'S BUILT TO LAST!**

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## A new era begins

*continued from page 86*

plants covered, the industry is really stretching itself to do the best job it can in collecting dust at operating plants. Methods vary, depending upon conditions and individual preferences, but most new plants are adopting systems that cover collection of dust at every conceivable point where it may be generated. Both mechanical and electrostatic methods are used, and at most new installations the processes are continuous.

Modern plants use dust-collection systems that gain the highest possible efficiency. Recently, one manufacturer developed a new-type electrode for use in electrostatic precipitators that is said to greatly increase efficiency in dust collection with reduced space requirements.

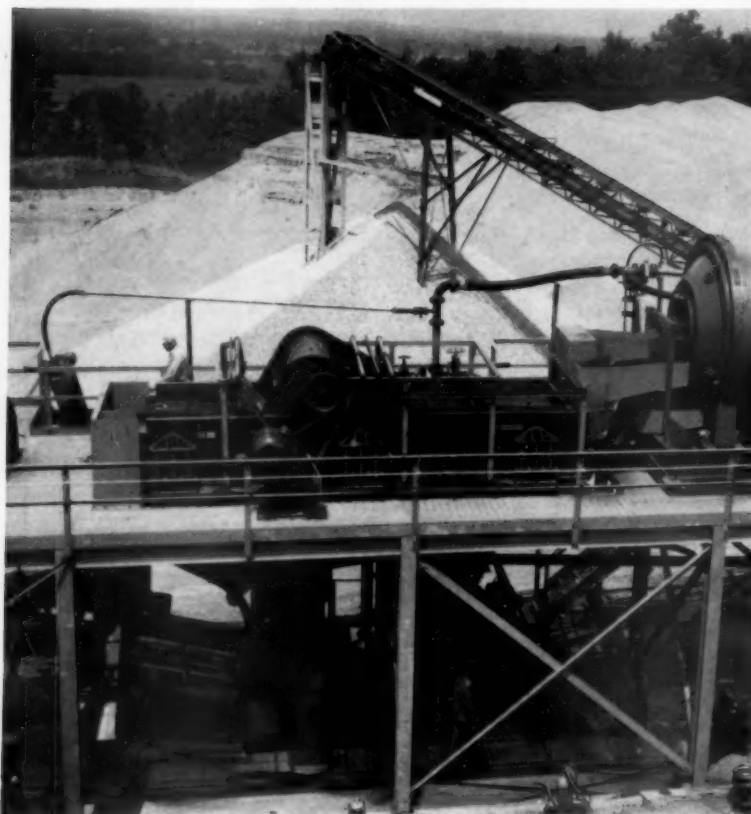
In addition to improved efficiency, cement companies are looking at dust collection equipment installations with an eye to improving community relationships. As an example, one plant installed a completely dustproof plant, even though it is located in a thinly populated desert area.

**Automatic control.** From the quarries through

the pack houses, cement plants are getting to be almost completely "push-button" operations. Just name an operation in any phase of the manufacturing processes and there's a control unit for it. The burning phase, especially, is getting a big play in instrumentation and control. Some of the new central-control panels on the burner floor are getting to look like controls for modern electric utility plants.

Of course, controls and instruments are used to produce more dependable and uniform products and to reduce operating expenses in the manufacturing processes. In many of the new plants studied, feed control to both raw grinding and finish grinding is completely automatic. In one case, the accent on control in raw grinding at a wet plant eliminates the need for slurry blending as such. In another, feed control instruments are located in the laboratory, so that any required feed changes indicated by constant laboratory testing are made right from the laboratory. Isotopes are being used at another plant to give a constant picture of the feed rate to kilns. There are many other examples too numerous to mention here—but the trend toward automation is definitely complete and rapid.

**Future planning.** One evident method used to decrease total plant cost is that of designing new plants so that future manufacturing facilities will



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**THE PROCESS...**  
Marginal pit raises production 300% and meets specs.

**THE EQUIPMENT...**  
Wemco Mobil-Mill for Heavy Media Separation

**THE USER...**  
Bundy Hill Gravel Co.,  
Hillsdale County, Michigan

**THE RESULTS...**  
This HMS installation has brought the production of a marginal pit up to commercial standards. Volume has increased 300 per cent, and quality of the product has risen to meet stiff State requirements.

**WEMCO**

WESTERN MACHINERY COMPANY  
650 Fifth Street, San Francisco 7, California  
Representatives in all principal cities

## A new era begins

*continued . . .*

be available when they are needed, without too much additional construction. Several of the new plants studied began operation with only one kiln; four of them began with two kilns. But, in many cases there is room for future installation.

This type of economic planning exemplifies another method used by the industry to reduce unit cost of manufacturing cement. It also indicates a firm faith in the future of the industry.

It is not difficult to see these trends taking shape in the cement industry. They stand as marked evidence that cement manufacturing is indeed in the middle of a new area in which great increases in efficiency and product quality already have been obtained. The future holds even more promise for advancement.

END

## Heavy media separation

*continued from page 132*

tion in Chicago a total treatment cost per ton of 15 to 20 cents was estimated, depending on proportions of media required.

The float or waste material usually represents from 11 to 22 percent of the HMS feed. This was one problem confronting the commercial operator when considering installation of HMS; that is, the extra charges on a waste product necessarily must be added to his beneficiated material cost. In practice, he has found that the float can be used in his specialty products, such as crusher run base, private walkways and drives, chicken runs, etc., where the absorbent material is acceptable. There may be some local market research and sales promotion effort necessary to obtain a complete acceptance of this material, and partial return of the mining cost.

Offsetting HMS treatment costs are the savings effected in the mix requirements. By the use of higher quality mineral aggregates, considerable savings in more costly components of the mix can be obtained, while still retaining the same ultimate strength of concrete, which, after all, is the end product desired. In one instance, this amounted to 68 lb. of cement per cu. yd. of concrete, plus 13 lb. of pozzolan. Cement cost was \$4.75 per bbl. and pozzolan \$23 per ton, so a saving resulted of \$1.01 per cu. yd. Investigations now are being made of using other than low alkali cement, particularly where the reactive fractions have been removed, in part or in whole.

*Please turn to page 168*



Owatonna Aggregates officials E. W. Hammel and son, Donald Hammel, at their plant in Owatonna, Minn.

### THE PROCESS . . .

Sand, gravel, and aggregate production from a marginal-grade glacial deposit

### THE USER . . .

Owatonna Aggregates Corporation, Owatonna, Minn.

### THE EQUIPMENT . . .

Wemco Sand Preparation Machine, Wemco Mobil-Mill, Wemco Remer Jig

### THE RESULTS . . .

With installation of Wemco equipment, this plant is now an efficient producer of large tonnages, able to meet increasingly tight state specifications, in all size ranges, even though deposit is of poor quality.



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**REDUCE**  
Material  
Handling  
Costs

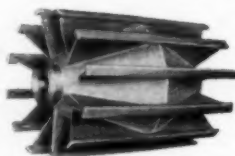
**ELEVATING  
and  
CONVEYING  
EQUIPMENT**  
by

**STANDARD METAL**

#### WING-TYPE SELF-CLEANING PULLEY

**Lower Cost, Stronger, Longer Lasting**

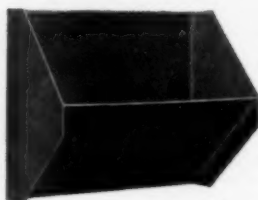
Reinforced all-steel welded construction of this pulley provides longer service, lower operating costs, greater efficiency. Built to deliver maximum service under severe operating conditions, Standard Metal's Self-Cleaning Pulley combines greater strength with less weight.



#### CONTINUOUS ELEVATOR BUCKET—STYLE #2

**Exceptional Resistance to Wear**

This style of bucket is just one of several types of rugged, longer lasting, low-cost steel elevator buckets manufactured by Standard Metal. Available in Salem, Style "A," Shelf Type and other continuous style buckets for all types of operations.



#### GEAR-OPERATED BIN GATE

**Easy-to-Operate for Greater Output**

This Standard Metal Bin Gate has all-steel welded construction for longer life. It is fast and efficient, helps reduce handling costs. Other styles of bin gates by Standard Metal also are available.



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## Heavy-media separation

*continued from page 167*

Beneficiation must be obtained at an economical cost to meet the increasing demand for aggregates. The Bureau of Public Roads' estimate on aggregates which will be needed in the next 12 years amounts to approximately 8.7 billion tons for the Highway Program alone. In many areas, the nearest available gravel will require treatment to meet soundness specifications. It is by HMS treatment of these otherwise undesirable sources that sufficient tonnage of sound material can be produced economically.

END

## Ag-lime

*continued from page 154*

tinue to come back for more goods and services in the future.

**Mr. Lindsay:** How can the agricultural limestone producer help in promoting a customer education program?

**Mr. Morrow:** It would seem that one of the necessary steps to get more farmers to use the limestone they need is to get them more urgently limestone conscious. To date, only a fraction of the fields in Indiana needing limestone has received it in the quantity needed.

One of the first steps is a good soil test. We believe, here at Purdue, that with a good soil test, the industry will sell more agricultural limestone. Farmers are inclined to be too conservative when they estimate their limestone needs without a test. And when less than the necessary amount has been applied, crop results will not achieve the full yield potential of the soil, and the job of applying limestone will have to be done over. Obviously, it would be more advantageous to test the soil first and then to apply the right tonnage of properly sized material.

The limestone producer can help in an educational campaign on an individual basis using his own techniques to reach the farmer. He can promote educational work on the basis of an industry approach through educational activities of the association to which he may belong. As an individual or as an industry he can cooperate more closely in educational work with others interested in this field, such as ACP and the Agricultural Extension Service. After all, they too really want the industry to sell more limestone and to get adequately paid for it.

*Please turn to page 170*





**YOU CAN'T BARGAIN WITH SAFETY**

In rotary drilling, pulling a 100-ton, two-mile string of drill pipe subjects the drilling line to the terrific stresses imposed by fast acceleration, shock loads, bending and overwinding on drums. Only wire rope with the highest degree of quality in hardness, strength and fatigue resistance can be used, for toolpushers know that . . .

## ***A quality rope is a safe rope***

Whether you use wire rope in the field or in a factory, *safety is just as important to you*. When you buy "bargain" rope you bargain with safety. It can cost you more than the pennies you save. Buy on the basis of *quality*—buy Wickwire Rope.

**For extra strength—buy Wickwire's Double Gray  
IWRC extra improved plow steel wire rope**



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YELLOW TRIANGLE**



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ROCK PRODUCTS, May, 1958

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## Ag-lime

*continued from page 168*

There are aggressive limestone producers in Indiana who have been represented on the program in a very fine way in recent Extension and Soil Conservation Service meetings for farmers, contributing factual information for the farmers present, and incidentally, building up a demand for their company's product. Purdue University Extension Department uses a number of devices to reach the farmer—individual contacts, meetings, letters, newstories, radio, television and demonstrations. None of these methods are patented.

Research and the Extension Service from their beginnings have promoted the use of limestone on the land. As long as farm land needs limestone, they will continue to do so and will welcome any opportunity to cooperate with the producers and the industry to further the use of agricultural limestone by the farmer.

The size of the market for limestone in this state, and in many other agricultural states would certainly justify the trouble and expense to develop a customer education program along these lines.

END

## Cement industry modernization

*continued from page 134*

capacity. For the current year, we estimate this excess at 32 million bbl., about 20 percent of the whole. It is expected, of course, that cement use will increase over the long term and that the present excess will also decrease because of retirements of marginal facilities. Nevertheless, it should be abundantly evident that further capacity building in our market, or anywhere in the country, is now completely unsound and could become burdensome.

It is our view that the continuing prosperity of our industry depends almost solely on whether or not further new capacity will be built. Some amount of unused capacity is desirable, of course, but it now looks to us as if the reasonable limit has been exceeded.

Despite this, we continue to hear of contemplated new ventures in cement—ventures which we consider wholly unjustified . . . In these situations, it is to be hoped that good economic reasoning will prevail before it is too late.

END

## ROLLING STONE CAN'T DENT THIS PLATE!

### *It's made with Hendrick H. Quality Steel*

Hendrick H. Quality Perforated Plate is made from high carbon or stainless steels. High carbon can be heat-treated after perforating for a longer life. This tough steel was carefully developed by Hendrick, after many years of experience in selecting and specifying the best analyses of steel for the aggregates industry.

In addition, Hendrick H. Quality Perforated Plate assures uniformity in your product. Full clearance practically eliminates blinding. You get faster deck changes, for lowered labor costs.



The large, open area offers you maximum protection. Hendrick H. Quality Steel Perforated Plate is available either flat, corrugated or stepped, in any desired shape and with perforations of any size. Write to Hendrick today to find out more about this durable Perforated Plate.

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**More and more cement companies are turning to**

## **CEDARAPIDS DOUBLE IMPELLER IMPACT BREAKERS**

*Here's Why!*



**5360 H DOUBLE IMPELLER IMPACT BREAKER** turns out 1000 tons of limestone per hour in Kansas. Cedarapids Vibrating Grizzly, 5 Horizontal Vibrating Screens and 4 Hammermills, plus conveyors, complete the plant.

**IN MONTANA**, a 3042 Double Impeller is reducing wet quarry-run limestone, containing 4% silica, to  $\frac{3}{4}$ " minus. The owner says "It's ideal equipment for this kind of rock."

**AT A CEMENT COMPANY'S QUARRY IN MICHIGAN**, a 5360 Double Impeller is reducing extremely hard quarry-run shale to 3" minus. Operating 8 hours a day, the unit requires practically no maintenance.

● **BIG TONNAGE PRODUCTION** . . . Up to 1000 tons per hour output meets capacity demands to supply today's expanding market.

● **HIGH RATIO OF REDUCTION** . . . 40 or 50 to 1 reduction ratio cuts production costs. Cedarapids Double Impellers, which reduce 53" diameter material to minus 3" in one pass, are often used for simultaneous primary and secondary reduction, thus reducing the need for auxiliary secondary crushers, screens, conveyors, etc., and cutting power requirements.

● **LOW MAINTENANCE COSTS** . . . With rock fed from the highest point of the unit, the entire breaking chamber is utilized for breaking rock in suspension. Incoming rock is struck and broken by rock hurled upward and outward at terrific speed by oppositely rotating impellers. There is approximately 50% less contact of stone on metal, thus reducing wear on impellers and breaker bars.

● **TRUE IMPACT ACTION** . . . The discharge opening is wider at the discharge end to eliminate any possibility of scrubbing action or pressure crushing that result in excessive wear and high power consumption. Breaking is accomplished only by impact of rock against rock and against breaker bars and impellers.

These are but a few of the many Double Impeller features that help cement companies step up output and cut production costs for crushing limestone and shale. See your Cedarapids distributor for complete details about *all* Double Impeller Impact Breakers.

**IOWA  
MANUFACTURING COMPANY**  
Cedar Rapids, Iowa, U.S.A.

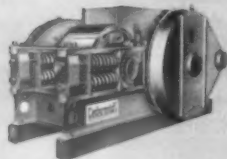
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**ROLL CRUSHERS**, in 8 sizes with 3 types of roll shells, insure high capacity of the smaller size finished products you want.



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... meets air pollution requirements everywhere.
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## ROCKY'S NOTES

(Continued from page 21)

science and engineering, we wonder if we didn't do our visionary author an injustice. His scheme, at the present time, does not seem at all impracticable, and it could be accomplished, apparently, without recourse to those unknown but possible developments of nuclear energy.

### World's greatest quarry operation?

Our only excuse for bringing up the subject here is that were the late Mr. Riker's scheme to be put into effect, it would probably involve the largest quarrying operation ever conceived. The Russians are said to have used nuclear explosives for blasting in quarries or mining operations; maybe that would be a constructive way to dispose of our country's stock of atomic and hydrogen bombs. However, that's immaterial to the carrying out of Mr. Riker's scheme.

Of course, every grade school pupil knows or should know what the Gulf Stream is; at least they used to be taught such things when we went to school. Few people, however, know what an immense source of heat it is, and how great an influence on climate. It flows north in a broad deep current in the Atlantic Ocean off our East Coast, getting more easterly as it goes north; and south of Newfoundland turns east, and warms the west coast of Europe. Thus it is that England, France and other countries, which are about the same latitude as Labrador, have relatively mild climates. The Gulf Stream is too far off our own east coast to be of any help, except in southern Florida, and between it and most of the coast a cold current—the Labrador current—comes down from the north polar regions.

Assuming that Mr. Riker's figures, based on data then available, are approximately correct, in cooling from 75 deg. to 55 deg. F., the Gulf Stream produces as much heat as the burning of 2,000,000 tons of coal every minute. A large part of this heat is dissipated when some part of the frigid Labrador current meets and mingles with the Gulf Stream south of Newfoundland, over the Grand Bank, or shallows in the North Atlantic Ocean. However, the bulk of the Labrador Current comes down west of the Gulf Stream on our east coast, and results in a much more severe winter climate than would otherwise be the case in New England and the Middle Atlantic States.

To make it brief, Mr. Riker's plan was to build a rip-rap jetty southeast-

(Continued on page 174)



# TRABON

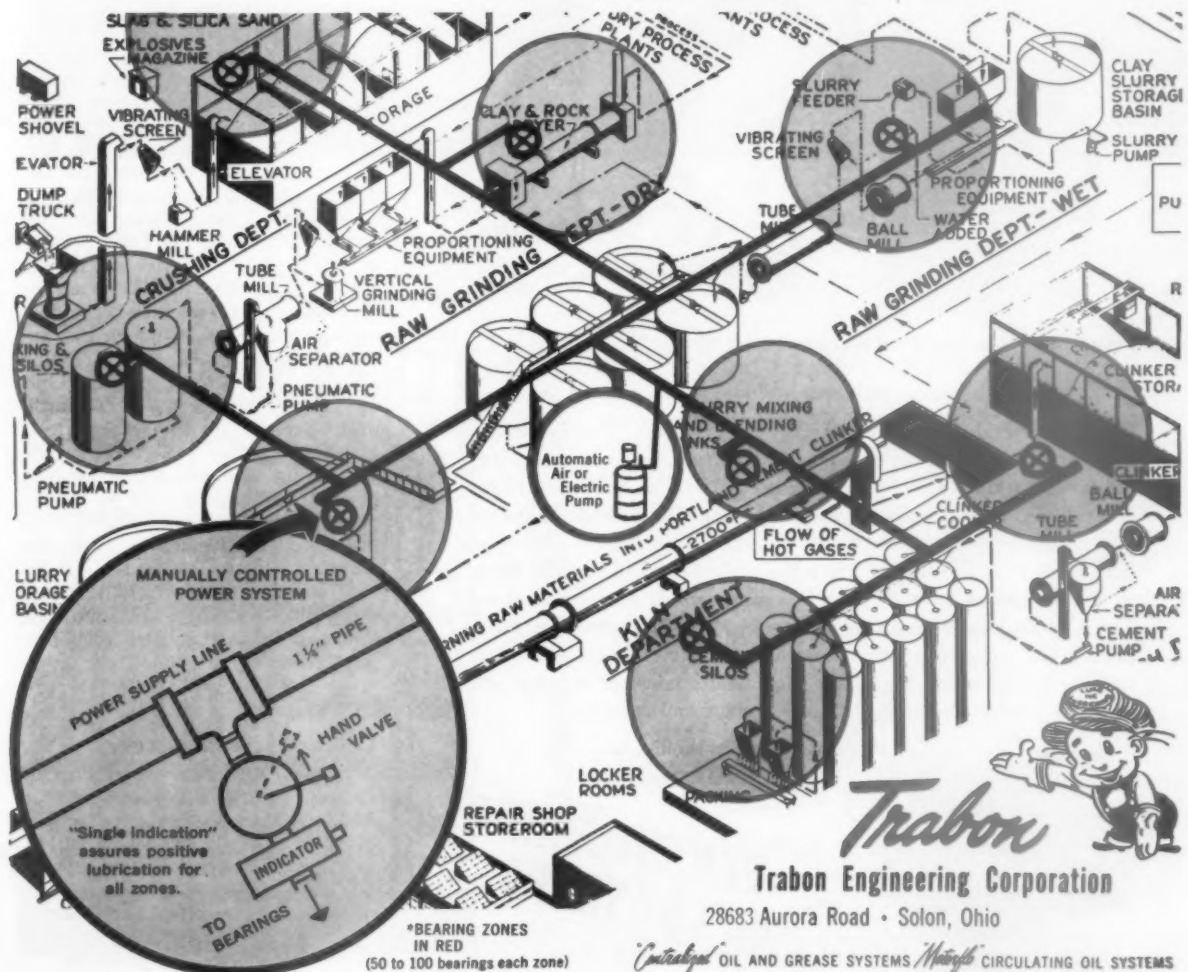
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ROCK PRODUCTS, May, 1958

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## ROCKY'S NOTES

(Continued from page 172)

erly from the southeast point of land in Newfoundland, extending about 200 miles into the Atlantic Ocean. This is not so great a job as would appear at first blush, since most of this jetty would be on the Grand Bank, a vast submerged plain of sand, gravel and silt, over which the average depth of water is said to be not more than 250 ft. The scheme consisted of a backbone of rip-rap, which would serve to slow down and divert the Labrador current, which comes off the

polar ice cap on the east side of Labrador, causing it to drop its burden of ice and glacial material, and build up a bar. This would then deflect the Gulf Stream, or at least part of it, into the Gulf of St. Lawrence and thus to the eastern shores of Quebec and the southern shores of Labrador, while the Labrador Current would be diverted easterly and under the rest of the Gulf Stream.

It is contemplated that this would completely change the climate of northeast Canada and Newfoundland, rendering them as pleasant a place to live as England and France are now. Mr. Riker went even farther in his

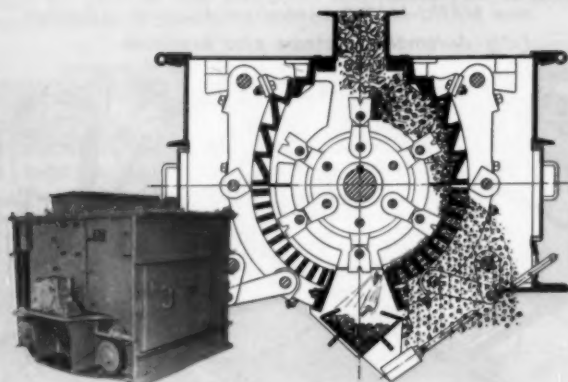
speculations and suggested that the resulting melting of much of the polar ice cap of North America might shift the polar axis of the Earth in such a way as to provide our part of the northern hemisphere with more sunshine and a more agreeable climate all around! It might also have the effect of raising the ocean levels, which, however, could be more embarrassing to Western Europe than to us.

What about the cost of this grand scheme? Mr. Riker estimated it would take about 200,000,000 cu. yd. of rip-rap, and based on costs as they existed in 1912, he figured that the total expense of quarrying and placing the stone in the jetty would amount to something like \$215,000,000, without any allowance for the second-hand or recovery value of the necessary machinery and equipment, including towboats and barges. That was a lot of money in 1912, but now, even figuring our present dollar as depreciated to the equivalent of 20¢ of the dollar in those days (which isn't far from right), this is only a little over a billion dollars, and a billion dollars in our present economy of government and its expenditures for public works is hardly more than a bagatelle!

Those of us who have made the St. Lawrence-Saguenay river trip know that there is no lack of available good durable stone waiting to be quarried. In fact, interested producers on the trip, viewing the continuous high rock cliffs right on deep water, sadly remarked, why does the Lord provide so much good material so readily transportable where there is no use for it? Well, now you see how it could be usefully employed. Although our author predicted the effect of deflecting the Labrador current and the Gulf Stream would be beneficial to Northwest Europe, by preventing their mingling, our guess is that it would be just the opposite, since the heat of the Gulf Stream can't be in two places at the same time. Anyhow, we might well consider the scheme as a counter threat to Russia, for it probably could be manipulated to freeze up permanently any North Atlantic Ocean ports that country may now have access to.

END

## CUT CRUSHING COSTS THIS WAY



Nearly everybody knows that in many cases the Pennsylvania Reversible Impactor is the most economical and efficient mill for secondary crushing. But there are cases where the Pennsylvania Reversible Hammermill gets the call over the Impactor. This cousin to the Impactor also does a large amount of stone reduction by impact. (Note upper half of crushing zone above.) So when the pre-crushed material drops to the bottom of the mill there is a minimum of abrasive crushing action on the cage bars. This saves money. Also the expense and room needed for a closed circuit system is saved. Reversibility eliminates turning of hammers. Adjustable cage assures constant tonnage and uniform product for entire life of hammers and cage bars.

Pennsylvania Crusher Division  
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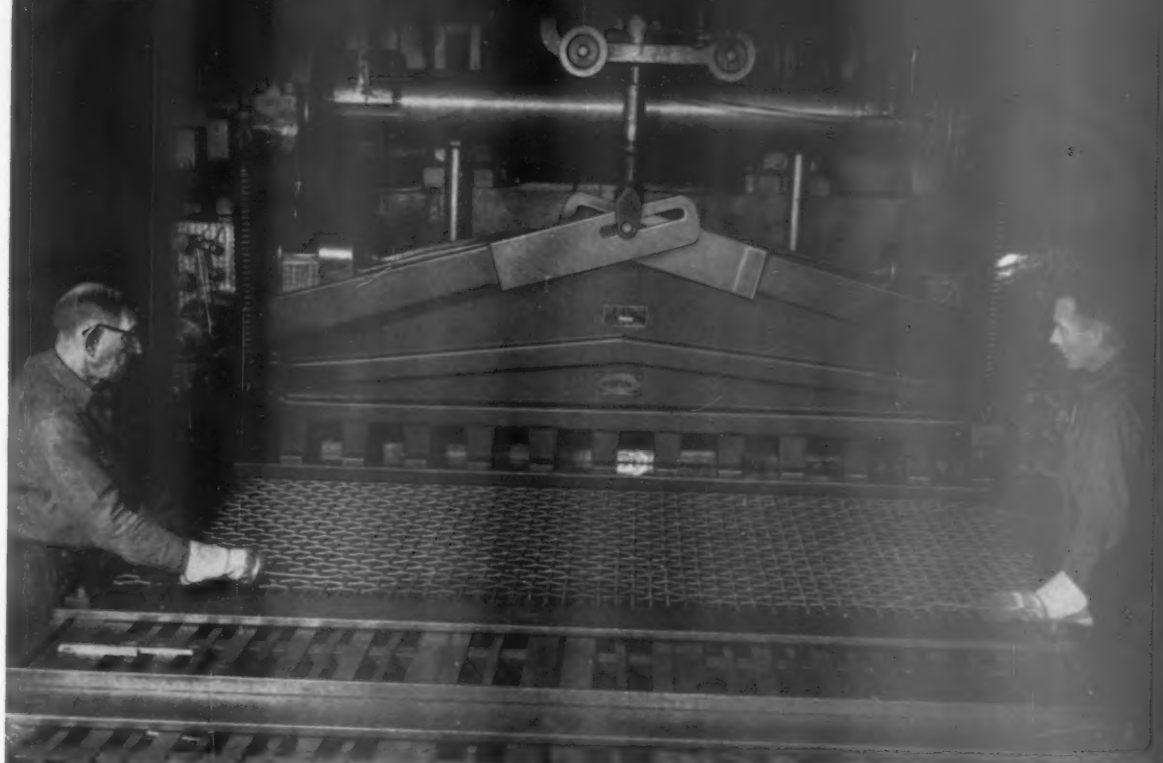
Pennsylvania Reversible Impactor  
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**PENNSYLVANIA  
CRUSHERS**

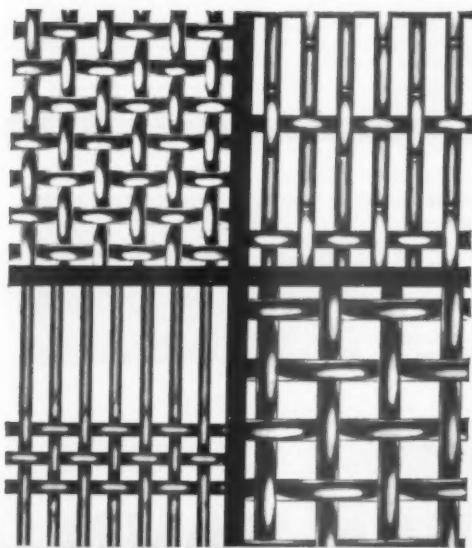
### Celebrates anniversary

HURON PORTLAND CEMENT CO., Detroit, Mich., in celebration of its 50th anniversary, held a seven-day program of exhibits at Memorial Hall in Alpena. Purpose of the program was to demonstrate to people in the area the company's part in the cement industry and to keep them informed of new techniques and processes.

*Another* reason why L-S Screens are better . . . .



## LUDLOW-SAYLOR shears—does not burn—wire ends to insure accurate dimensions and to prevent distortion



Ludlow-Saylor Screens and Wire Cloth can be furnished of stainless, oil-tempered, high-carbon, monel, bronze, copper, brass, or any other wire.

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This extra 2-man operation is typical of the many reasons why L-S Screens wear longer—stand up better under toughest conditions—and retain their rigid dimensional stability far longer than ordinary screens. Order L-S Screens next time . . . you pay no more, but get much more!

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ROCK PRODUCTS, May, 1958

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# KENNEDY PNEUMATIC CONVEYING SYSTEMS

set new standards of efficiency in the cement industry

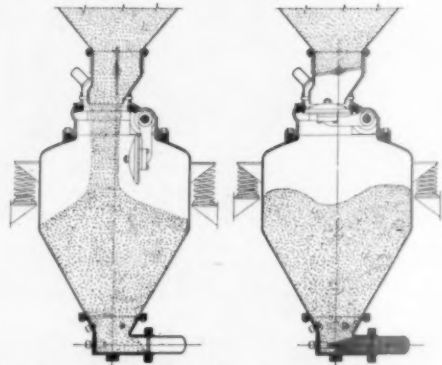
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Clinker Grinding Section**

A single pump handles the output of two clinker mills conveying—424 barrels per hour through—a 6" standard pipe for—400 feet horizontally and—110 feet vertically with—230 horsepower!

**Cement Plant—  
Clinker Grinding Section**

One pump handles the output of one clinker mill conveying—105 barrels per hour through—a 4" standard pipe for—1000 feet horizontally and—70 feet vertically with—100 horsepower!



The exclusive batch cycle of the KENNEDY Pneumatic Conveying Pump eliminates contact of cement with moving parts. Completely sealed tank during discharge permits use of higher pressures for greatest efficiency.

The KENNEDY Pneumatic Conveying System is more efficient because:

- there are no motors, screws or high speed moving parts;
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- you get months of high capacity operation without attention.



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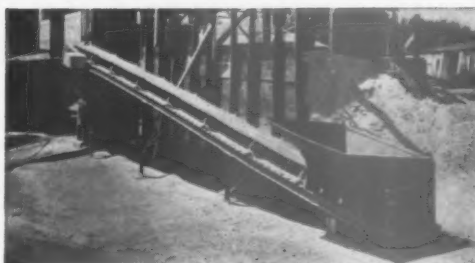
**LONG HAUL**—Even the longest Barber-Greene Conveyors are built of standardized components . . . produced on a precision, quantity production basis. They can be assembled in almost limitless combinations to cut the time and cost of any material handling job.

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Thousands of installations—ranging from a few feet to thousands of feet—prove that belt conveyors move bulk material at lowest cost.

No other machine is so simple in construction or requires so little maintenance. No other machine can deliver such high hourly capacities with so little power or attention.

Barber-Greene has given a new meaning to belt conveyor economy. Built of standardized components, Barber-Greene Conveyors are delivered sooner . . . require less engineering . . . are erected faster . . . give top performance . . . and are more easily altered to meet changing or expanding requirements. Being standardized, repair parts are readily available—usually from the stock of your local distributor.



**SHORT HAUL**—Even the shortest Barber-Greene Conveyors are available in standardized components in the width and length to suit your needs. These small conveyors provide the economical way to handle the widest range of materials with greatest flexibility.

56-7B-FE

# Barber-Greene

AURORA, ILLINOIS, U.S.A.



CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

ROCK PRODUCTS, May, 1958

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177

# ANNOUNCING...

## An Important Improvement in INDUSTRIAL TELEVISION



### DIAMOND "UtiliVue" MODEL 500 CAMERA SYSTEM

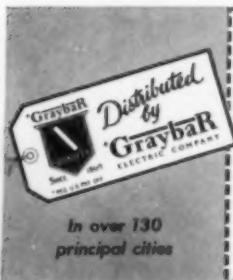
This new industrial television camera and control unit provide a sharper picture with finer detail. The 500 has automatic compensation for wide variations in light on the scene viewed . . . assuring a good picture with any reasonable illumination. Picture quality is maintained automatically under wide fluctuations in line voltage.

The miniaturized camera is exceptionally compact and easy to use. The controls are simple and can be remotely located from the camera. As many as five cameras can be used with one control unit by means of a Diamond camera switcher.

Diamond Industrial Television can save you money . . . improve operation . . . increase safety. For further information, get in touch with your nearest Graybar office or use the coupon below.



7820



#### DIAMOND POWER SPECIALTY CORP.

"FIRST IN INDUSTRIAL TELEVISION"  
ELECTRONICS DEPT., P.O. BOX 587  
LANCASTER, OHIO

Please send me without obligation a copy of new bulletin showing how Diamond Industrial (Wired) Television will help me reduce costs, improve quality, increase sales and aid safety.

Name

Title

Company

Address

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## NEW U. S. PATENTS

By OLIVER S. NORTH\*

### Gypsum

2,820,714—Method for stabilizing the set of gypsum plaster. A mixture of alum and lime is reacted in water, and the dried reaction product added to the calcined gypsum, along with a filler, preferably raw gypsum and a small amount of commercial retarder. Other suitable fillers include diatomite, hard-burned gypsum, silica flour and expanded perlite. (to H. J. Schneider and O. A. Oshida. Assigned to National Gypsum Co.)

2,822,242—Method of preparing anhydrite calcium sulfate especially suitable for use in the manufacture of composite titanium dioxide-calcium sulfate pigments. Finely ground limestone and synthetic or natural gypsum are mixed with water to form a slurry, and the slurry added to strong sulfuric acid in slight excess. Reaction mixture is agitated at elevated temperature. When reaction is complete, calcium sulfate anhydrite is filtered from the mother liquor. (to D. P. Doll, W. Rodgers, and C. R. Trampier, Jr. Assigned to National Lead Co.)

### Bentonite

2,820,521—In a process for plugging drill hole crevices through which drill fluid is being lost, a solid body of pressed bentonite containing an embedded explosive is lowered, and charge detonated to spray the bentonite into crevices. The pressed bentonite mass is coated with tar or like material to prevent it from being hydrated by the drill mud through which it is lowered. (to A. J. Teplitz. Assigned to Gulf Research & Development Co.)

### Fluorspar

2,824,643—Froth flotation process for concentrating ores containing calcium, such as scheelite, powellite, fluorspar and the like. A slurry of ground ore is treated with sodium carbonate and one of the following compounds: hydroxyethyl cellulose, carboxymethyl cellulose, or a refined mineral oil emulsified with an amine. A good concentration of the calcium-bearing mineral is obtained. (to M. N. Shaw.)

(Continued on page 180)

\*Copies of United States patents are available at a cost of 25 cents each from The Commissioner of Patents, Washington 25, D.C. For convenience, coupons, each good for one copy of any patent, may be purchased from that office at the rate of \$5.00 per 20-coupon pad or \$25.00 per 100-coupon pad.

# Change from Wet to Dry!

Polysius booked within one year orders  
for the conversion of cement plants  
from wet to dry process covering a  
yearly capacity of

8,500,000

barrels

reducing yearly fuel consumption by

3,040,000,000 BTU



**POLYSIUS GMBH.**  
NEUBECKUM WESTPHALIA  
WESTERN GERMANY

**POLYSIUS Ltd.**  
THE BRACKENS  
ASCOT, BERKS

**POLYSIUS S.A.R.L.**  
REPRÉSENTATION POUR LA FRANCE  
ET LA BELGIQUE RUE AUBER PARIS IXe

# RINGBLASTER with *Western*® ammunition smashes kiln rings faster...



Smash kiln rings faster—hit more accurately—get far better firing results from *your* kiln gun with Western ammo! Western Super-X 8-gauge ammo develops a smashing force greater than any shell. And, ballistics tests proved this shell is 10% more effective when used in the new RINGBLASTER kiln gun.

Super-X 8-gauge ammunition is made of a special alloy that assures deeper "keyway" penetration... faster kiln ring disintegration. Fewer shells are needed, and down time is cut to a new low.

Additionally, the RINGBLASTER, with its effective sound reducer, gives operators a measure of sound safety never before possible.

"Terrific improvement!"... "Impressed with its quieter operation!"... "Should have been done before!"... these are typical of the many favorable comments made by new users of this improved kiln gun.

RINGBLASTER is the *only* kiln gun to come factory-equipped with a sound reducer. Write for catalog.

## ATTENTION: SAFETY DIRECTORS AND MAINTENANCE ENGINEERS!

**Ramset**® also manufactures powder-actuated fastening tools for anchoring to steel and concrete. Just introduced—FLITE-CHEK: a tool which prevents overpenetration or fastener escape. Write for full details.



12177-E Boreo Road

Enter 1106 on Reader Card

Cleveland 11, Ohio

ROCK PRODUCTS, May, 1958

## NEW U. S. PATENTS

(Continued from page 178)

### Mineral wool

2,825,933—Improved apparatus and method for treating **mineral wool** or other inorganic fibrous material to remove unfiberized material therefrom. (to J. C. McMullen. Assigned to The Carborundum Co.)

2,826,236—Plant and method for producing rigid or semi-rigid panels or plates of resin-impregnated **mineral wool**, and for coating surfaces thereof. Heat and pressure are applied as a continuous sheet of material moves through apparatus at a relatively rapid rate. (to F. Meauze and V. Wiquel. Assigned to Vetreria Italiana Balzarotti Modigliani, S.p.A.)

### Kaolin

2,825,699—In the production of **kaolin** catalysts, iron can be substantially removed by treating the kaolin with ammonium chloride and heating to a temperature sufficiently high to convert all iron compounds to ferric chloride but insufficient to decompose the ammonium chloride and form excess free hydrogen. The ferric chloride then is volatilized with steam. (to J. E. McEvoy and T. H. Milliken, Jr. Assigned to Houdry Process Corp.)

### Miscellaneous

2,825,700—Production of improved nickel catalyst consisting of nickel carbonate filter cake, water, nickel nitrate hexahydrate, magnesia, **alumina cement**, **kaolin** and **graphite**. (to K. D. Ashley and W. B. Innes. Assigned to American Cyanamid Co.)

2,826,301—In the flotation of **phosphate rock**, an aqueous suspension of ore is conditioned with an oxidizing agent selected from the group consisting of sodium peroxide, a mixture of sodium peroxide and hydrogen peroxide, and a mixture of sodium peroxide and lithium fluoride. Effects of slime content are minimized and aeration is improved. Process is said to be suitable for ores of various other nonmetallic minerals, including **apatite**, **sylvinite**, **langbeinite**, **fluorspar** and **feldspar**. (to I. M. Le Baron. Assigned to International Minerals & Chemical Corp.)

2,826,505—Porous material for use in humidifier plates and filters is made by die-pressing a mixture of rice hull ash fragments, **ball clay**, **lime** and water, and firing the shapes to 1,800 to 2,350 deg. F. Finished product contains a large number of capillary passages. (to J. D. Jones.)

(Continued on page 182)





## BUILT FOR BOULDER BUSTING BRUTES

Stop breakage problems on every kind of earthmoving job with tough, rugged *ESCO* Cast 12M Dozer Cutting Edges. *ESCO* Cast 12M Cutting Edges can take the severe punishment of longer pushes and rougher pioneering, even on the largest machines.

Careful heat treating of this *ESCO* steel alloy, 12M, makes *ESCO* Cutting Edges extra tough and hard *all the way through*. And, the same qualities that insure this breakage resistant toughness also impart amazingly high wear resistance.

You've really got the edge for low cost earthmoving and pioneering with *ESCO* Cast 12M Dozer Cutting Edges. Call your nearest *ESCO* dealer today for details.



### ELECTRIC STEEL FOUNDRY COMPANY

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.

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IN CANADA ESCO LIMITED

# THERE IS THE RIGHT BIT FOR YOU... OUT OF A POSSIBLE COMBINATION OF THOUSANDS OF SIZES AND TYPES



## WE CAN GIVE YOU THE RIGHT ONE

Based upon over 70 years of world-wide drilling experience, we have the right bit to use to obtain the best possible cores at the lowest cost per foot. Out of the many combinations possible with the four matrices, several stone size ranges, three grades of diamonds, and various face contours, there is the one "Oriented" Diamond Bit you want for the job you have to do.

Write today, giving all information you can provide. We will be glad to recommend the bit we believe to be the best suited to your drilling conditions. Always order or specify SPRAGUE & HENWOOD "Oriented" Diamond Bits. For the complete diamond bit story, write for our Diamond Bit Catalog No. 320-1.

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SCRANTON 2, PA.



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EXPORT REP.: PHILIPS EXPORT CO., 100 EAST 42ND ST., N. Y. 17, N. Y. CABLE ADDRESS: PHILYORK

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## NEW U. S. PATENTS

(Continued from page 180)

2,820,266 and 2,820,268—Preparing shell molds by means of frozen mercury patterns. Refractory materials used include zirconium silicate, **kyanite**, **sillimanite**, **graphite**, **chromite** and coated exfoliated **vermiculite**. (to E. F. Kohl.)

2,820,695—Among the mixed mineral silicates said to be usable as polymerization inhibitors in this process for stabilizing oleum and liquid sulfur trioxide are listed **kyanite**, **sillimanite**, **garnet**, **lepidolite**, **anorthite**, **anthophyllite**, **oligoclase** and **labradorite**. The ground mineral is added to the oleum and the mixture agitated at elevated temperature. (to R. Pick. Assigned to E. I. du Pont de Nemours & Co.)

2,820,265—Materials and methods used in preparing shell mold structures by means of frozen mercury patterns. Exfoliated **vermiculite** is cited as a highly satisfactory loose support backing material, although **expanded clay**, **shale** or **slate** particles may be used instead. Coating composition includes a refractory material, such as zirconium silicate, **kyanite**, **sillimanite**, **mulite** or crushed firebrick. (to E. F. Kohl and Z. Kazenas. Said Kazenas assigned to Mercast Corp.)

2,821,514—Fire resistant composition for coating steel plate or the like comprises an alkali metal silicate adhesive, refiberized **asbestos**, a rubber polymer and an insulating refractory material, such as pulverized fire clay. (to D. V. Sarbach and V. G. Boger. Assigned to The B. F. Goodrich Co.)

2,821,802—Method of making Christmas tree ornaments or like decorative items. A conical cardboard body shell is filled with a mixture of **gypsum plaster**, **asbestos** powder and a hardenable paste. When the mixture is hard the article is given three successive coatings: a polyvinyl compound, such as "Koroseal EC 866"; then a mixture of salt, exfoliated **vermiculite** and an organic plastic material; and, finally, a coating of sodium silicate. While the sodium silicate is still wet, the article is sprayed with glass beads, tinsel, diamond dust or other light reflective material. (to C. F. Glaser.)

2,823,112—Metallurgical flux for treating ores of copper, manganese or iron consists of **asbestos**, **borax** or **fluorspar** and other materials. (to J. J. Miller.)

END



**BRADLEY HERCULES MILLS**

## HOW TO INCREASE CEMENT PRODUCTION UP TO 50% . . .

The capacity of an existing tube or compartment mill can be increased up to 50% or even higher simply by installing a Bradley Hercules Mill as a preliminary pulverizer on either the dry raw or finish side. Yet this increased production of cement raw material or finished cement is obtained at no increase in horsepower consumption per ton or barrel produced. The Hercules automatic electrical feed control eliminates manual operation. Rugged construction . . . dustless operation . . . easy accessibility to grinding parts keep maintenance costs at an absolute minimum. That's why so many in the cement industry rely on the Hercules Mill for increased production of finished material.

*See Chemical Engineering Catalog or  
for complete information, write for Catalog No. 63*



**BRADLEY PULVERIZER CO.**

*superior grinding equipment since 1891*

LONDON ALLENTOWN, PA. BOSTON

ROCK PRODUCTS, May, 1958

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183

IT'S THE MULTIWALL BAG OF TOMORROW...



**A** big promise—the *multiwall of TOMORROW!* But rigorous tests, both in laboratory and actual use, show that Bemis Multiwalls made with the revolutionary new extensible kraft offer the biggest multiwall development in years.

Testing still goes on. We can document more and more of the qualities of Bemis extensible bags . . . and we are learning more about which industries they will serve beneficially.

(Normally, an announcement of this kind would be held up until all tests are completed, but this development is so important, and final reports are so near, that you should be alerted.)

**We can say positively, though . . . the adaptability of Bemis Extensible Multiwalls for the cement industry has been definitely proved. They will give you superior service, probably at a cost no greater than your present bag cost, maybe at a saving.**

**Y**ou will certainly want to get the complete story about Extensible Multiwalls from your Bemis Man. And you will want to order a trial quantity—possibly 5,000 bags as a starter—in an early shipment of Bemis Multiwalls. Supplies will be somewhat limited until full production of the new paper develops. Meanwhile, all Bemis customers will, of course, get an “even shake.”

You will be well advised, though, to get acquainted with Bemis Extensible Multiwalls as soon as possible . . . to learn how they fit into your operation.

#### WHAT IS EXTENSIBLE KRAFT PAPER?

It is sturdy kraft that is given a special mechanical treatment, during

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manufacture, to provide special qualities that are particularly desirable in Multiwall bags. This paper is made by West Virginia Pulp and Paper Company under the trade name “Clupak.” “Extensible” means that it has a definite, though almost imperceptible, “stretch” in both directions. The “stretch” provides the qualities that make for better multiwall bags. (Note—This is not a creped paper.)

#### WHAT ARE THESE SPECIAL QUALITIES?

1. Because of the “stretch,” it is stronger . . . more resistant to shock and breakage. Consequently, a lighter construction will provide an equally strong bag. (Paper weight can, in some cases, be reduced 20%

or more without reducing strength.)

2. Although perfectly smooth to the touch, it has a “soft hand” and is easier to hold and handle.

3. Easier on the workman’s hands.

4. Better stacking and storage, without slipping.

5. It gives added resistance to scuffing and abrasion.



General Offices—408 Pine St., St. Louis 2.  
Sales Offices in Principal Cities



Yes! ... it's **ALL STEEL**



**HP RANGE:**

$\frac{1}{2}$  to 50 hp

**RATIOS:**

4:1—14:1—24:1 (or 20:1)

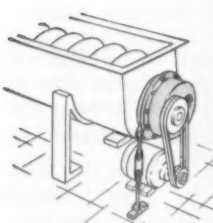
**OUTPUT SPEED RANGE:**

420 to 5 rpm

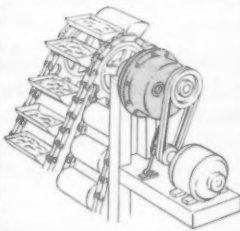
**TORQUE RATINGS:**

up to 31,500 lb-in

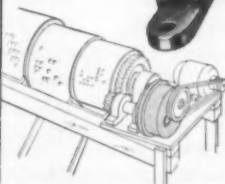
**A FEW TYPICAL APPLICATIONS**



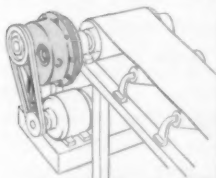
**SCREW CONVEYOR**



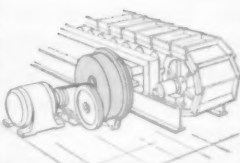
**BUCKET ELEVATOR**



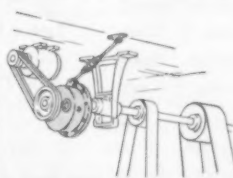
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**LINE SHAFTING**

**FALK**  
**ALL STEEL**  
**Shaft Mounted**  
**Drive**

...Steel can "take it"!

**STEEL frame** ... of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

**STEEL housing** ... will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

**STEEL tie-rod** and straddle-mounted tie rod brackets... are fastened to heavy steel frame by steel bolts in double shear.

**DELIVERIES**  
**TO MEET YOUR REQUIREMENTS**

Off-the-shelf delivery from your Authorized Falk Distributor. Shipment from factory or warehouse stocks within 72 hours after receipt of your order.

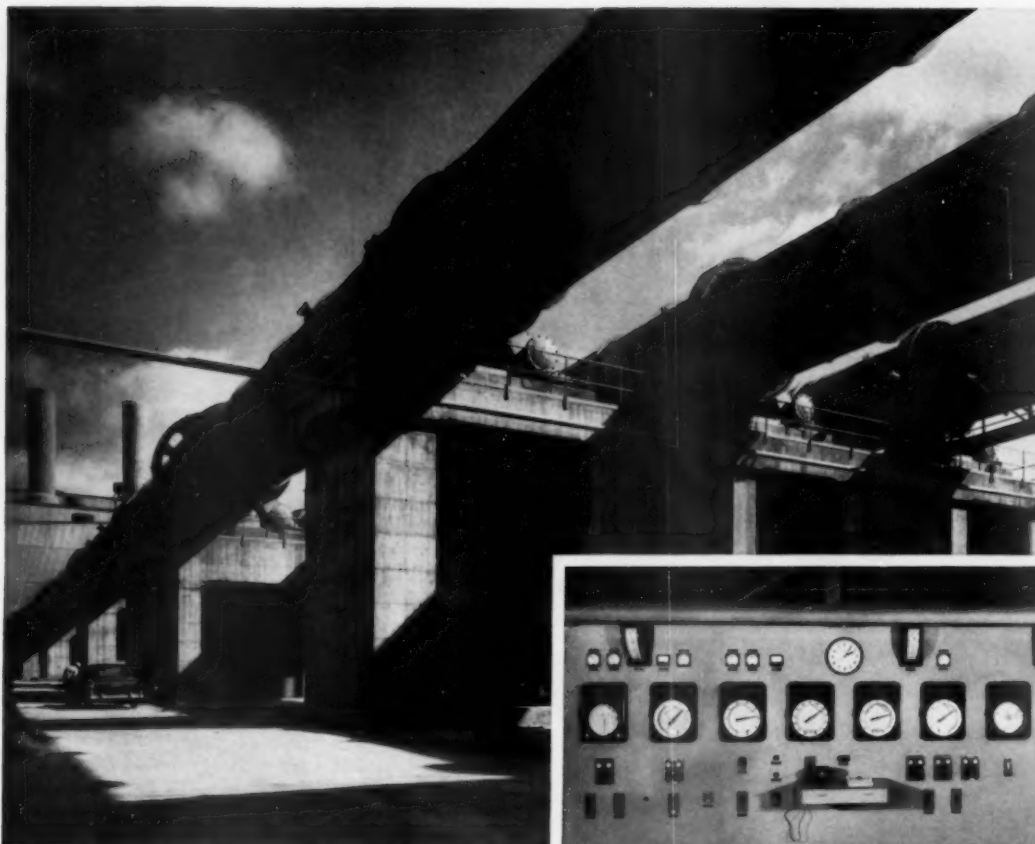
Write for Bulletin 7100

**THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.**

Representatives and Distributors in Most Principal Cities

Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

**FALK**  
...a good name in industry



All kilns operated by Missouri Portland Cement Company are equipped with modern Bailey Instrumentation and Control Systems.

## How to control the digestion of giant kilns

These giant kilns have delicate stomachs. But the Missouri Portland Cement Company knows how to coddle them to get maximum capacity, uniform product and low fuel rate.

They do it with a Bailey Control System with a central Control Panel where a single attendant has complete control of the variables of combustion and heating.

Because the system keeps continuous chart records, the Burner can check the reading and trend of Kiln Speed, Exit Gas Temperature, % Oxygen in Exit Gas, % Combustibles in Exit Gas, Kiln Shell Temperature, Hood Draft, Temperature of Secondary Air Leaving Cooler,

Temperature of Coal-Air Mixture from Coal Mill, Fuel Gas Flow, Feed End Draft, Kiln Speed, Cooler Speed, Cooler Fan Discharge Pressure, Cooler Undergrate Pressure, Cooler Air Flow, Coal Mill Primary Air Pressure, Coal Mill Exhauster Fan Suction, and Fuel Gas Flow.

The system works so dependably that week-long kiln runs have been made without the operator touching anything.

Let a Bailey Engineer help you plan for peak performance! For additional information write for a Bailey Kiln Control Folder.

C-14



## BAILEY METER COMPANY

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In Canada—Bailey Meter Company Limited, Montreal

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## NEW LITERATURE

### Belt conveyors

THE JEFFREY MFG. CO. has prepared Bulletin 909, a conveyor handbook for use in proper conveyor, belt and idler selection. Engineering information including data on idler spacing, conveyor slopes, vertical curves, methods of plotting curves and determination of discharge curve is provided, as well as sections on horsepower, types of drives, speeds and loading.

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### Belt drives

MORSE CHAIN CO. is distributing Catalog TB-58 describing its five basic Timing belt "pitches." In addition to engineering, selection and installation data, the following sizes are covered:  $\frac{1}{8}$  in.;  $\frac{3}{8}$  in.;  $\frac{1}{2}$  in.;  $\frac{3}{4}$  in. and  $1\frac{1}{4}$  in. pitch.

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### Brakes

B. F. GOODRICH AVIATION PRODUCTS has brought out a brochure describing its Hi-Torque hydraulic drum type brake with 360 deg. expander tube actuation designed for large tractors, scrapers and earthmovers. Specifications are provided and safety and control features and braking action are discussed.

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### Dial scales

THE HOWE SCALE CO. has issued a catalog describing its various types of dial scales. Listed are related accessories and specifications including dial graduations, capacity and platform dimensions.

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### Diesel tractors

INTERNATIONAL HARVESTER Co. has made available the following bulletins describing its diesel tractors: Form CR-629-H covers the 55.7 drawbar hp. TD-9; Form CR-630-H, the TD-14; Form CR-631-H, the TD-18. Track frames and components, main frame and case, and other features are discussed as well as operation, matching equipment and attachments.

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### Drills

ATLAS COPCO EASTERN, INC. has published the following product folders: Leaflet E-1106 describes the

BMK automatic pusher legs for rock drills; Leaflet E-1097 covers Type BBD-12-WH "Terrier" rock drill; Folder E-568 discusses carbide inserts now incorporated in Sandvik Coromant integral drill steels.

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### Dust filters

THE DAY CO. has issued Bulletin G-579 describing its Type "RJ" dust filter. Cut-away views show working parts and filtering principle. Dimension, specifications and illustrations are given for five basic units.

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### Electrodes

THE LINCOLN ELECTRIC CO. has published a booklet to guide in the selection of electrodes for a particular welding job. After presenting the basic characteristics of each family of electrodes, individual electrodes within a family are described as to physical properties, current ranges, sizes and welding procedure.

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### Excavator

GAR WOOD INDUSTRIES, INC. has released Form F-220 describing its heavy-duty Model 75-B  $\frac{3}{4}$ -cu. yd. crawler-mounted excavator, with shovel, crane, dragline, back hoe and clamshell attachments. On-the-job photos are provided as well as illustrations of construction and design features.

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### Flexible couplings

T. B. WOOD'S SON'S CO. has prepared Bulletin 10100 covering its "Sure-Flex" flexible couplings. Included are selection tables, which take into consideration the type of driver, horsepower and rpm. as well as the specific application.

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### Flow meters

THE BRISTOL CO. has prepared Bulletin F1607 describing its differential pressure type flow meters. Selection, sizing and engineering data is given as well as flow calculation tables. Also presented are equations for calculating throat diameters, flow rates and manometer ranges.

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(Continued on following page)



If you're feeling very well



or if you're feeling queerly



If it's living you want most



have a checkup yearly

IT'S YOUR BEST  
CANCER INSURANCE!

American Cancer Society



## NEW LITERATURE

(Continued from preceding page)

### Iron castings

NORDBERG MFG. Co. has prepared Bulletin 263 describing the physical and chemical characteristics of its Ni-Hard nickel-chromium alloy white iron castings for application in grinding mill liners and feed spouts, dredge and shovel teeth and slurry pump parts. Photos of a variety of finished castings are provided in addition to a conversion chart for comparison of recognized measurements of hardness.

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### Mixing plant

BARBER-GREENE Co. has prepared a bulletin describing the mixing of stabilized base materials in its Model 828 "stabilization plant." Suggestions as to the components of the basic plant, together with several other suggested plant layouts involving variations in types of aggregate and fines feeding systems are given.

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### Protective coatings

RUST-OLEUM CORP. has brought out 36-page Form 257 describing its line

of protective coatings. Coatings discussed include primers, short oil types, long oil types, heat resistant and chemical resistant types. Also covered are methods of surface preparation, use of primers and finish coatings.

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### Sand and gravel jig

MECKUM ENGINEERING, INC. has prepared Bulletin 800 describing its sand and gravel jig for the processing and upgrading of 1½ x 0-in. sand and gravel regardless of particle shape. Construction, design, lubrication and drive features are presented along with photos of jig installations.

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### Sand preparation

ROCK PRODUCTS HAS MADE available Nathan C. Rockwood's *Screening Fine Materials*, (copyright 1946), an authoritative discussion of determining factors in the operating efficiency of vibrating screens. Also available is *Fundamental Principles of Sand Settling*, (copyright 1929 and 1943) written by Edmund Shaw as a practical guide to commercial sand producers.

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### Shovels

SCHIELD BANTAM Co. has made available Bulletin A-265 describing its newly designed shovel attachment. Complete shovel specifications are given, as well as digging and lifting capacity charts and photos of both the ¾-cu. yd. digging bucket and a special ½-cu. yd. rehandling bucket.

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### Tractor

ALLIS-CHALMERS MFG. Co. has published Catalog MS-1243 describing its HD-21 turbocharged diesel powered tractor. Photographs and other illustrations point out engineering and construction features. Also pictured are matched equipment and a line of tractor accessories.

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### Valves

JORDAN INDUSTRIAL SALES DIV. of OPW Corp. has made available Bulletin J-160 describing its sliding gate pressure reducing valves, and Bulletin J-180 describing its sliding gate temperature control valves. Also provided are dimensional drawings, control ranges, material specifications and sizing charts.

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END



## MANITOWOC AGITATORS

improve quality  
...reduce costs

You will find the modern Manitowoc Slurry Agitators the real answer to your agitating and blending problems, because they combine both mechanical and air agitation, to give you uniform, high quality cement at the lowest cost.

The Manitowoc Agitator has been designed to employ air on an intermittent cycle, as economically as possible, and at the same time employs a unique method of piping which prevents the air line from plugging.

The Manitowoc Central Control Valve is a self-contained, fast acting unit complete with air manifold and valve drive and may be very accurately timed to suit any desired operating cycle.

- Combine air and mechanical agitation
- Prevent Air Pipes from clogging
- Reduce "Step-Bearing" Wear
- Produce Perfectly uniform slurry
- Simple, Fast Acting Control Valve

Manitowoc Agitators have many exclusive features and advantages, and can be engineered to meet your exact requirements even for tanks over 100' in diameter. Write today for full details.

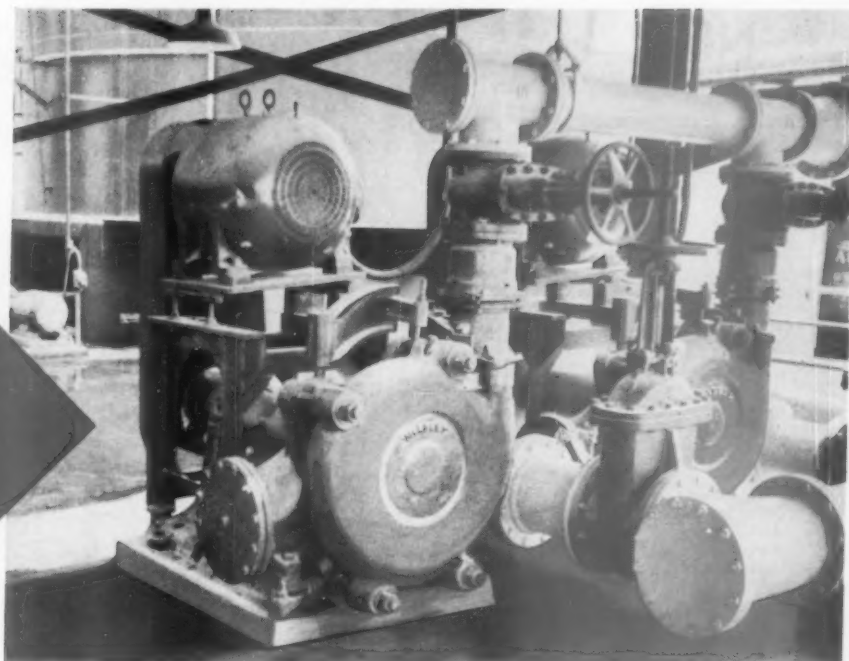
## MANITOWOC SHIPBUILDING INC.

Manitowoc, Wisconsin

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Here's  
Where You  
**REDUCE**  
Operating  
COSTS!



The moment you install **WILFLEY Sand Pumps** operating costs start dropping—production efficiency goes up. The dependable, dollar-saving performance of Wilfley Sand Pumps is well known to plant operators the world over. They know they can rely on Wilfley to give them:

**Maintained high efficiency throughout the life of long-wearing parts.**

**Continuous, trouble-free operation without attention.**

**Low maintenance costs through simplified design and quick-change features.**

INDIVIDUAL ENGINEERING ON EVERY APPLICATION

Write, wire or phone for complete details.

Wilfley Sand Pumps  
"Companions in Economical Operation"  
Wilfley Acid Pumps

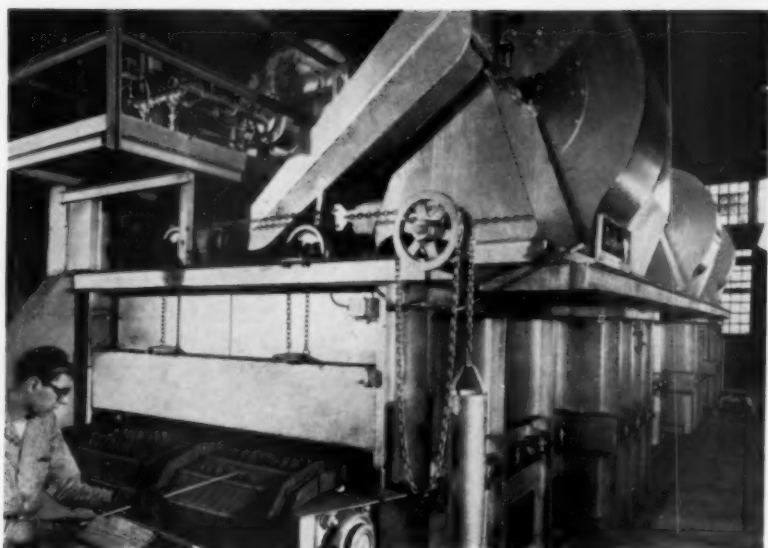
# WILFLEY

## SAND PUMPS

### A. R. WILFLEY and SONS, INC.

DENVER, COLORADO, U. S. A. P.O. BOX 2336-NEW YORK OFFICE: 122 EAST 42ND STREET, NEW YORK CITY 17

# NEW MACHINERY



## Forged steel grinding balls for cement making

IMPROVED FORGED STEEL GRINDING BALLS now rolling off a new modern production line offer improvement in

the manufacture of cement and the pulverization of metallic ores, because of their uniformity in size and roundness, toughness and hardness.

Two types of forged steel grinding balls now being produced are the USS carbon-manganese ball for service in most mill applications and the USS alloy steel ball for use where unusual grinding conditions are encountered. The new production line produces grinding balls in eleven sizes, ranging from  $\frac{3}{4}$  to 5 in. in diam.

The installation for this modern production line includes continuous heat treating and tempering equipment and new forging and rounding machinery. U. S. Steel Corp., 525 William Penn Pl., Pittsburgh 30, Pa.

Enter 101 on Reader Card

## Slurry viscosity controller



A CONTINUOUS VISCOSITY controller called the Cement Plastograph is used to control the viscosity of cement slurries in the wet process cement industry. The plastograph uses a special on-stream sensing element.

It is installed so that only part of the main stream of the slurry is measured. The slurry is reunited with the main stream after it flows through the sensing element. The photo shows the "on stream" installation of a Cement Plastograph. C. A. Brabender Instruments, Inc., 50 E. Wesley St., S. Hackensack, N.J.

Enter 100 on Reader Card

the needs of continuous process industries for measurement and control of flow of dry materials at low to medium rates from 0 to 3,000 lb. per minute.

The Pneu-Weigh operates over a 10 to 1 range, which can be converted to 50 to 1 by the Omega variable speed belt drive. Its accuracy is held within plus or minus one-half percent of the maximum rate. Design is rugged and features positive chain drive to eliminate slippage, and continuous integration which totalizes correctly regardless of belt speed. Omega Machine Co., 345 Harris Ave., Providence 1, R.I.

Enter 102 on Reader Card

## Positive displacement pump



A 3-IN. PUMP operating on the positive displacement principle has been engineered to handle all liquids, from water to high viscosity fluids. It pumps mixtures with up to 78-percent solid content or with high abrasive content. Capacities range from 47 gpm. at 25 psi. to almost 300 gpm. at 150 psi.

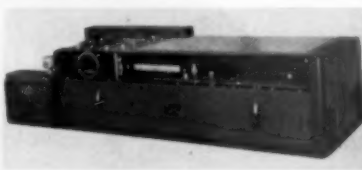
As the impeller teeth unmesh, a vacuum is produced, drawing the liquid into the space between the lobes. The liquid moves between the teeth and case housing to the opposite side of the pump. When the impellers mesh, the liquid is forced into the discharge line.

The ports of the pump are so designed that the liquid is spread across the full width of the impellers and the liquid velocity is coordinated with the speed of the pumping impellers. This allows the liquid to be pumped with minimum energy loss from turbulence and friction. Dimmick Pumps, Inc., Box 9517, Tulsa, Okla.

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(Continued on page 192)

## Belt weigher



A BELT (STREAM) WEIGHER, known as the Pneu-Weigh, has been announced. This advanced unit meets

**SECO VIBRATING SCREENS**

**FIRST CHOICE**

**FOR SCREENING SLAG**

*... best for all aggregate screening*



**53% OF ALL SLAG SCREENING PLANTS IN THE  
U. S. CHOOSE SECO VIBRATING SCREENS . . .**

Why this marked preference for SECO vibrating screens among so many of the nation's leading slag producers? TWO WORDS: **DEPENDABLE PERFORMANCE** . . . and what important words they are. When you invest your money in equipment . . . claims don't mean a thing. Whether you're screening slag, ag-lime, stone, gravel or any other material, you want results.

You want accurate sizing, good volume and equipment that can stand the gaff when you're running long and hard during peak production seasons.

In short you want **DEPENDABLE PERFORMANCE** and that's why you want **PERFORMANCE PROVEN SECO VIBRATING SCREENS** on your job. They're **FIRST CHOICE** in the slag industry and **FIRST CHOICE** with thousands of the most successful aggregate producers in the land.

Write, wire or phone

**SCREEN EQUIPMENT CO., INC.,** Buffalo 25, N.Y.

Whatever you Screen  
**SLAG . STONE  
SAND . GRAVEL  
AG-LIME . ORE**

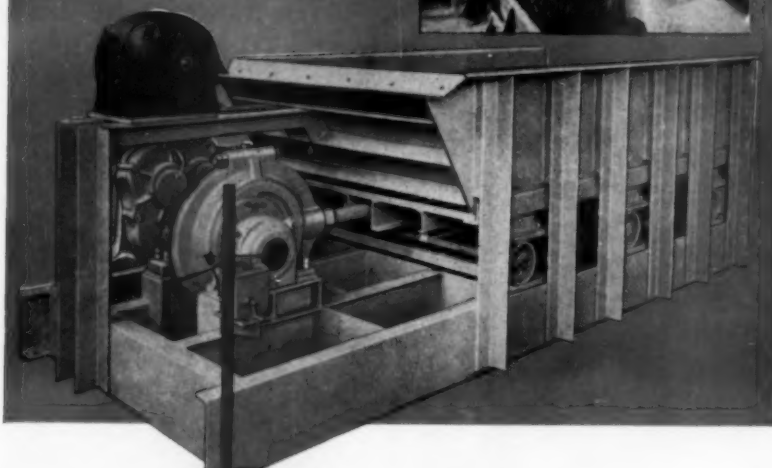
*You'll do it profitably  
with SECO VIBRATING SCREENS*



Send for  
**4 BEARING CATALOG  
#204 OR TWIN BEARING  
BOOKLET TB-21**

**SECO**  
TRUE CIRCULAR ACTION  
**VIBRATING SCREENS**

**Drastic Savings  
in Handling  
Costs...**



**Reciprocating  
Plate**

## **FEEDERS**

Get All  
the Facts  
from this  
New Feeder  
Bulletin  
No. FRE-157



Designed to handle all materials from sand to shovel-loaded rock . . . these units are the most efficient means of feeding uniformly-controlled quantities of materials to crushers, washers, conveyors and other machinery. In addition to providing substantial savings in material handling costs . . . these feeders lower repair and production costs by eliminating choke-ups, spills, overloads on motors and drives, wear and tear on machinery. Easily adjustable eccentric, force-feed lubrication.

**McLANAHAN & STONE  
CORPORATION**

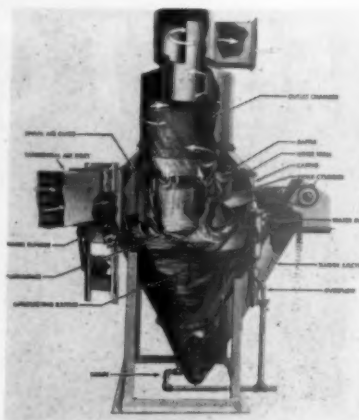
*PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835*

252 Wall Street, Hollidaysburg, Pennsylvania

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## **NEW MACHINERY**

(Continued from page 190)

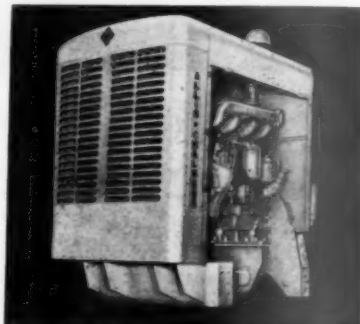


### **Wet dust collector**

A MANUFACTURER KNOWN for its bag-type dust collectors and airless blast cleaning equipment has added another product to its line. This latest development is the Wheelabrator wet dust collector. Now being introduced after extensive testing, the unit has several design features, including no moving parts, no nozzles or pumps. It delivers discharge air free of entrained water. Wheelabrator Corp., 1062 S. Byrkit St., Mishawaka, Ind.

Enter 123 on Reader Card

### **Diesel engines**



TWO NEW DIESEL power units, the 88-hp. Model D-344, and the 131-hp. Model D-516, are designed to serve a wide range of requirements in the construction field, in crusher plants, for OEM equipment, generator sets, and wherever heavy-duty general utility power units are adaptable.

The high-torque engines provide a steady hp. output at working speeds from 1,000 to 1,800 rpm. The D-344 is a 4-cylinder and the D-516 (pictured here), a 6-cylinder engine. Full pressure lubrication and thermostatically controlled cooling systems provide smooth, safe operation.



Adding to the operating efficiency of the engines is the 24-v. electrical starter and generator; the single plunger type, dust-proof and self-lubricating fuel injection pump; pintle-type injection nozzles; two fuel filters and bypass-type thermostats in the cooling system.

Overall width of both the D-344 and the D-516 is 33 in. Length from radiator to clutch of the D-344 is 64 $\frac{3}{4}$  in., and of the D-516, 80  $\frac{7}{16}$  in. Height to top of radiator of the D-344 is 51 $\frac{1}{2}$  in., and for the D-516, 51 $\frac{1}{2}$  in. Both units are available in either closed or open-type models. *Allis-Chalmers Manufacturing Co., Tractor Group, Milwaukee, Wis.*

Enter 124 on Reader Card

### Truck crane



AN AIR CONTROLLED, 40-TON capacity truck crane, featuring a new outrigger system, has been designed to strip easily and quickly for over highway travel, yet provide high capacity on the job.

The American 500 outrigger system features extremely deep center sections that swing out from the carrier rather than slide out, and which are locked into position. These sections are slightly longer than ordinary outriggers and are located almost directly under the rotating base of the machine, thereby becoming a steadying factor for the over-the-side operation. Two outriggers at the rear and one at the front of the machine add up to a five-point system for a solid foundation that permits a full 360-deg. swing.

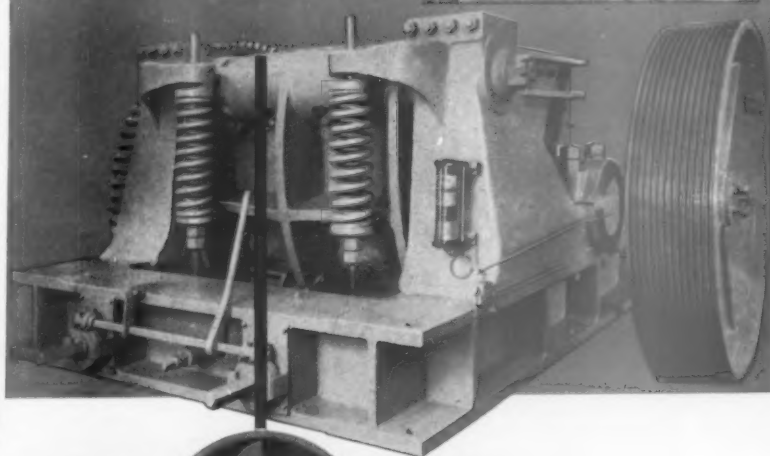
New type air controls assure pressure increases from smooth initial engagement to non-slipping full pressure at the extreme position of the valves. Controlled load lowering is standard on the 500 series machine, as well as controlled boom lowering. An optional shifter is available to disengage over-running clutch when user wishes to roll gearing backwards. It is interlocked with the boom brake to make a free fall boom impossible.

Travel weight on the new American truck crane is spread over four axles of a mobile carrier which is available in both the 10 and 9-ft. width. *American Hoist & Derrick Co., St. Paul 7, Minn.*

Enter 125 on Reader Card

(Continued on page 195)

**Toughest  
Crushing Jobs  
are done Most  
Effectively by**



## ROCKMASTERS

- Steelstrut Toggle automatically protects against damage from uncrushable materials.
- Will handle wet, frozen, sticky, muddy materials.
- Continuous crushing—can be choked without primary grizzlies or screens ahead.

High-capacity Rockmasters provide best economy in the most rugged crushing applications. Efficient for primary and secondary crushing, Rockmasters have been proved outstanding on many materials—including limestone, various ores, cement rock, coal, gypsum, hard shale and all similar materials. Low headroom, automatic lubrication and roller bearings on countershaft.

Get All the Facts  
from this New Technical  
Data Bulletin No. RMTD-56



**McLANAHAN & STONE  
CORPORATION**

*PIT, MINE AND QUARRY EQUIPMENT HEADQUARTERS SINCE 1835*

252 Well Street, Hollidaysburg, Pennsylvania

*Meet tough "Specs" at*

**LOWEST COST!**



Remove wood, ochre, chert, lignite, shale, coal, soft and porous stone, and non-plastic type clay from aggregates at the lowest initial and operating cost available, with the Meckum Sand & Gravel Jig.

The Meckum Jigs' high acceptability and performance is proven as the jugged aggregates meet increasingly rigid 'specs' with ease, enabling you to obtain new contracts and greater profits. With amazing simplicity and low cost of operation, Meckum Jigs produce premium quality concrete aggregates for only a few pennies per ton.

More Meckum Sand & Gravel Jigs have been installed, than any other method of removing deleterious materials from aggregate. Don't delay, be prepared. Find out how a Meckum Jig can benefit you.

**m**

**MECKUM ENGINEERING, INC.**

DAYTON ROAD, OTTAWA, ILLINOIS • 53 W. JACKSON BLVD., CHICAGO 4, ILLINOIS

Enter 1146 on Reader Card

## NEW MACHINERY

(Continued from page 193)



### Tractor loader

A NEW LINE of INDUSTRIAL equipment features the L600 loader (pictured), with modern design and boxed-section construction to make it easier to install, lighter and simple to operate. The Henry L600 loader is mounted to the tractor to provide greater visibility for the operator, with more time-saving convenience available for the operator's getting on or off.

With a rated capacity of 1,500 lb. to full height, and a breakaway capacity of 3,000 lb., the loader can dig 4 in. below depth with a reach up to 3 ft. ahead of the unit at 40 deg. dump. The unit also contains a wire-mesh, reusable, line-type oil filter which can be cleaned without the need to drain the oil reservoir. *Henry Manufacturing Co., P. O. Box 521, Topeka, Kan.*

Enter 150 on Reader Card

### Bin level indicator

SEVERAL IMPROVEMENTS have been made in the Bin-Dicator—automatic bin level indicator and control unit. Particularly helpful on units which are to be installed in hard-to-get-at locations is a twist lock cover. This new design has no nuts or bolts which can drop. It incorporates slotted hex head screws which need only to be loosened so that the cover can be turned and lifted, exposing the entire operating mechanism.

Another improvement is a vented housing, permitting a more sensitive and reliable operation.

New construction features include a drilled and tapped frame for assembly of cover, drilled and tapped frame for assembly of diaphragm and diaphragm retainer ring, and a diaphragm assembly which has perforated mounting holes to simplify replacement or change of diaphragm if required. *The Bin-Dicator Co., 163 13946 Kercheval Ave., Detroit 15, Mich.*

Enter 151 on Reader Card

(Continued on page 202)

Enter 1158 on Reader Card

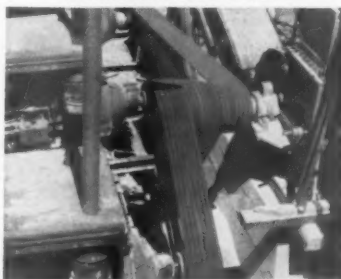


Thermoid Conveyor Belting on the job at the rock quarry of the V. R. Dennis Company, San Diego, California.

## Belting that's Built to Take It!

Years of service on the toughest jobs have proved that Thermoid Conveyor Belting gives dependable service during its extra long life . . . cuts downtime to a minimum.

Cut costs with  
Thermoid Multi-V Belts . . .



. . . and Thermoid Hose



**One big reason . . . superior construction:** belt carcass and cover are welded into a single unit by Thermoid's exclusive impregnation process.

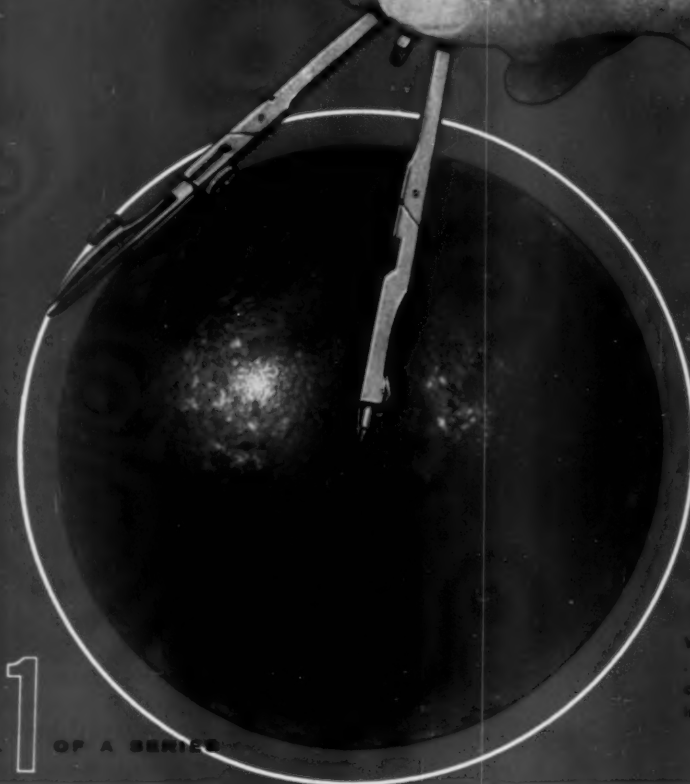
**Another . . . top grade materials:** Thermoid's specially woven, finest quality reinforcement enables Thermoid Conveyor Belting to trough easily, withstand shock loading as no ordinary belt can—yet it is flexible enough to avoid internal heat build-up.

Your Thermoid Distributor can help you select the conveyor belt that best suits your *specific* materials handling requirements.



Thermoid Company  
Trenton, New Jersey • Nephi, Utah

**ROUNDNESS  
IS  
IMPORTANT!**



Write today for prices  
... All sizes— $\frac{1}{8}$ " to 6"  
carried in stock for  
immediate shipment.

The more perfectly round a grinding ball is the better it grinds and the longer it lasts—deviations reduce its efficiency. Coates has established a reputation for the roundness of its Carbex Triple-Forged Grinding Balls which dates back to 1918 when they patented a process for the first round grinding ball. Great care and skill are employed in the manufacture of these superior products. More perfect sphericity assures you a ball that wears evenly and grinds better, longer. Continued checks and calibrations throughout the manufacturing process protect the high standards and assure uniformity.

Coates Carbex Grinding Balls are made of fine-grained, high-carbon steel. Scientifically heat treated to the core, they are hard, to last longer and to grind better; tough, to avoid shattering under stress of milling. Call for Coates Triple-Forged Carbex Grinding Balls . . . built with care for longer wear.

CS97-3



**COATES** STEEL PRODUCTS COMPANY  
GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

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# MONEY MAKING IDEAS FOR YOU---FREE

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THESE  
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**MAY, 1958**  
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Cannot be serviced after  
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Please print or type

Name \_\_\_\_\_ Position \_\_\_\_\_

Company (In Full) \_\_\_\_\_

Company Address \_\_\_\_\_ City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

MAIN PRODUCT OF PLANT \_\_\_\_\_ CAPACITY \_\_\_\_\_

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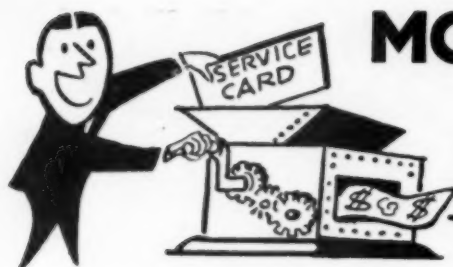
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Company (In Full) \_\_\_\_\_

Company Address \_\_\_\_\_ City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

MAIN PRODUCT OF PLANT \_\_\_\_\_ CAPACITY \_\_\_\_\_

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*A Diamond Studded Jewel*

*By*

\*\*\*\*\*  
**MACDONALD**  
\*\*\*\*\*

*Diamond Portland Cement Co.  
Middlebranch, Ohio*



New 3,500 bbl. ACL Kiln, Raw Mill and Crushing Plant

## A COMPLETE SERVICE

LAYOUT

DESIGN

CONSTRUCTION

\*\*\*\*\*  
**Macdonald Engineering Co.**

885 Bryant Street  
San Francisco, Calif.

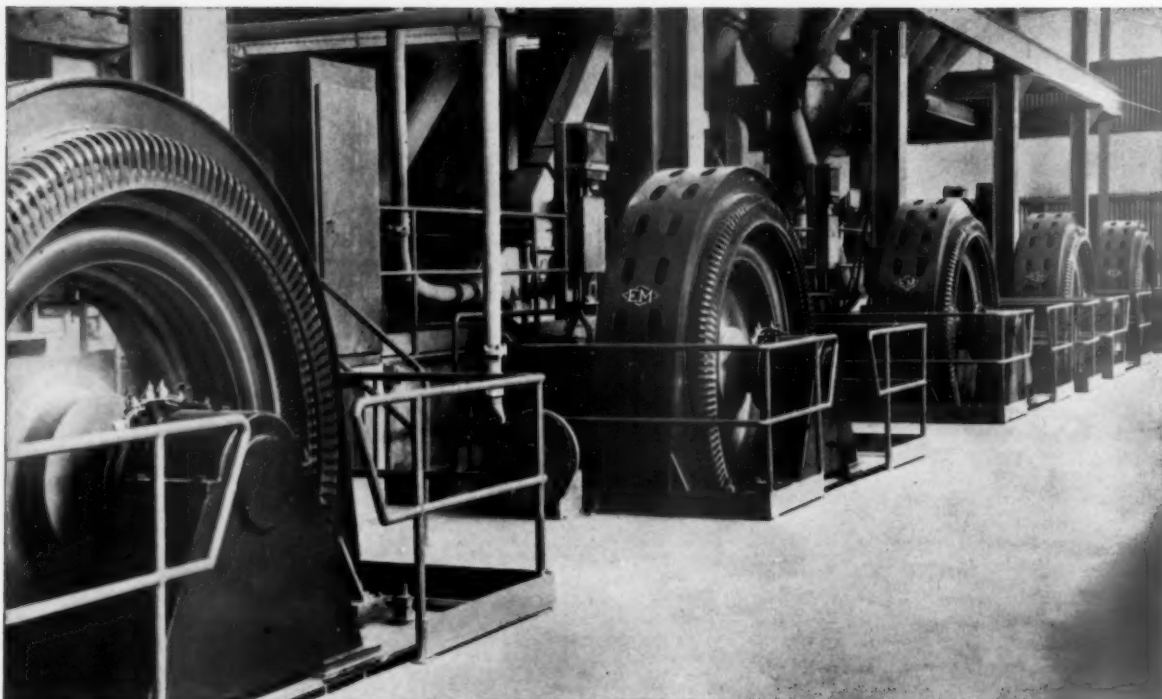
Constructing Engineers  
22 West Madison St., Chicago

2349 Yonge St.  
Toronto, Canada

\*\*\*\*\*  
Enter 1118 on Reader Card

ROCK PRODUCTS, May, 1958

199



Notable for advancements in safety and simplicity is the new grinding mill department of Dragon Cement Company, Northampton, Pa. An

excellent example of compactness, it is designed to be safely operated by four men. Rated capacity will be 2,400,000 bbl. of cement annually.

## How Dragon Cement Company drives mills efficiently and safely in new 4-man grinding mill department



### E-M "INCHER" CONTROL

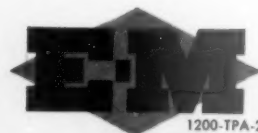
This E-M-developed control provides quick, safe spotting of grinding mills. It turns mills literally inch-by-inch into desired position, all at the touch of a button. One E-M "Incher" Control can serve several motors, saving time and greatly increasing safety.

● Helping to achieve labor conservation, simplified maintenance, and safety in this new raw and finish grinding mill are five rugged E-M Synchronous Motors rated 1000 hp, 180 rpm, 2300 volts, "unity" power factor. Specifically, here's how these E-M Motors contribute to new standards of economical plant operation:

1. **HIGH EFFICIENCY** conversion of electric power to mechanical power, resulting in minimum electric power cost for operation of mills.
2. **POWER FACTOR CORRECTION** with "unity" power factor helps keep overall plant power factor high, further reducing power costs.
3. **DIRECT CONNECTION** of Motors to mills, thru rigid couplings for simplicity and minimum installation space.
4. **HEAVY-DUTY MILL-TYPE CONSTRUCTION**, including extra-heavy motor frame, high thermal capacity cage windings, dust resistant coil finish, and cool running sleeve-type bearings.

When you combine such motor features and top performance with E-M Hi-Fuse (high voltage, high interrupting capacity) Controls, you get the ultimate in protection as well. Complete safety for personnel and equipment, plus *extra safeguards* against short circuits and abnormal operating conditions. Your nearest E-M sales engineer can give you facts and data. Write the factory for E-M Publication No. 175 on large synchronous motors.

**ELECTRIC MACHINERY  
MFG. COMPANY**  
MINNEAPOLIS 13, MINNESOTA



1200-TPA-2183

Specialists in making motors do **EXACTLY WHAT YOU WANT THEM TO**

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*It's a fact . . .*

**"EUC" REAR-DUMPS HAUL  
AT LOWEST COST!**



***Here's Why . . .***

For 25 years Euclid Rear-Dumps have been the outstanding choice of contractors, mines and quarries. They outnumber competitive off-highway haulers by close to a 4 to 1 margin. This unequalled field experience, backed by continuous product improvement, results in operating and maintenance advantages that enable "Eucs" to haul at lowest cost. These bonus benefits are not always apparent — seldom are, in fact — when you simply compare specifications, but they're mighty important to owners.

***Tops in Availability***

Downtime records invariably show that "Eucs" have unusually high availability and require a minimum amount of service and repair. This ability to stay on the job cuts costs, too, in standby equipment and in maintenance personnel and facilities.

***Parts and Service Unequalled***

With a large machine population, dealers can logically provide complete parts stocks and service but with a small number of machines in an area, extensive parts and service facilities are not economical. Generally, parts and service are available to owners of equipment in close relation to the number of machines in the territory. On this score—which has a direct bearing on the production and hauling costs of equipment—the Euclid dealer is your best source for Rear-Dump haulers, because his larger machine population justifies complete service and parts stocks to keep the equipment producing at lowest cost.

You can depend on "Eucs" and your Euclid dealer for everything that contributes to lowest cost hauling. That's why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio



**EUCLID EQUIPMENT**

FOR MOVING EARTH, ROCK, COAL AND ORE

## NEW MACHINERY

(Continued from page 198)



### Self cleaning bucket

A SELF-CLEANING ELEVATOR BUCKET originally introduced for elevating tempered foundry sand is now being used for conveying other products, including sand, gravel and bentonite. The separately mounted stripper plate loosens the material in the bottom of the bucket as it passes over the head pulley. This positive action enables the bucket to empty completely and carry a full load every trip. A cutaway view of the M-T-Matic bucket is shown here.

The buckets are available for centrifugal, continuous and high speed elevators, and are made for belt and chain mounting. A bentonite producer using the buckets for elevating minus 200 mesh material, some of it 400 mesh, reported that the buckets were working satisfactorily. There was no need to drill holes to break the vacuum, and excess spillage was not a factor. *Pekay Machine & Engineering Co. Inc., 863 North Sangamon St., Chicago 22, Ill.*

Enter 104 on Reader Card

### Horizontal vibrating screen



PRODUCTION OF A HORIZONTAL vibrating screen, the Screen Master, has been announced. Design features include the replacement of conventional, flat springs with cylindrical arms called drag links; clamp bars with rounded edges to make radial contact with

screen wire; removable feed-box side plate; hydraulic bearing removal and interchangeable parts. *Universal Engineering Corp., 625 "C" Ave., N.W., Cedar Rapids, Iowa.*

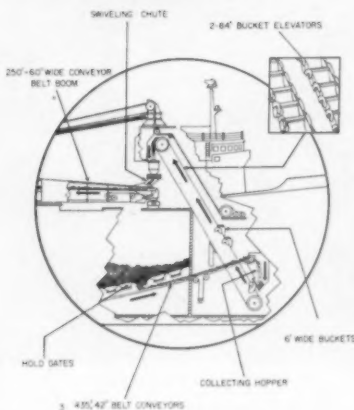
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### Jaw crusher components

ANTI-FRICTION BEARINGS and one-piece fabricated steel side plates are being used on a 60 x 48-in. jaw crusher. The 7-in. side plates replace cast steel side plates formerly used. The bearings, which permit self-lubrication from an internal reservoir, are applied at both the main and Pitman bearings. The end plates and the Pitman are of welded cast steel plate. *Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.*

Enter 106 on Reader Card

### Self-discharging ship



A SELF-DISCHARGING SHIP system cuts shipboard and on-shore materials handling costs through automation. The self-discharging super collier ordered by the Pocahontas Steamship Co., Salem, Mass., eliminates conventional discharging facilities such as bridges, stackers, towers, hoisters and trimmers. The versatile ship replaces the equipment, maintenance and upkeep now required on shore with automatic equipment built into the ship. The collier, the first of its kind designed for coast-wise trade, is expected to be delivered in September, 1958.

Featuring a unique conveyor system, the ship can unload its 24,000-ton cargo at the rate of 3,600 tph.—a ton a second. For flexibility, the system also allows a slow speed discharge rate of 1,800 tph. The diagram shows how the cargo is carried from hold to dock. Depending on the side of discharge, the entire operation can be handled from push-button control panels located on either side of the bow end of the ship. *Stephens-Adamson Mfg. Co., Aurora, Ill.*

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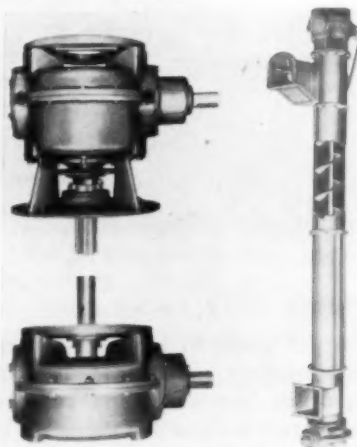
### Abrasion protection

VULCOLINE, a versatile cold bond rubber, has been compounded to provide abrasion protection for plant equipment—chutes, hoppers, troughs, bins—subject to rapid wear. A natural rubber with a special surface, Vulcoline is bonded by a special adhesive to a prepared surface, usually steel, though it may be brass, stainless steel, aluminum, rubber and synthetic rubber compounds.

Application is simple. Dirt, grease or corrosion first must be removed. Following preparation of the surface, adhesive is brushed on and allowed to dry. Next, a thin coat of activator is applied to either the metal or Vulcoline and let dry to the proper tack point. Now the rubber is applied to the metal and rolled with a small hand roll to remove any existing air pockets. *The Gates Rubber Company, Sales Division, 999 South Broadway Street, Denver 17, Colorado.*

Enter 108 on Reader Card

### Screw elevator



A SCREW ELEVATOR featuring dry shaft drive—the first screw elevator drive head which will not leak oil—is being introduced. The unit—shown, left, in the photo—is recommended for handling of cement and other bulk materials. The elevator is available with DSD (dry shaft drive) units to drive the screw from either top or bottom. The top unit, upper right, is designed with triple protection against oil leakage—so oil cannot leak down its vertical shaft. Lubricated parts and DSD's small reservoir of oil are entirely outside the elevator casing. Lower right, the bottom DSD unit (as well as the top) is designed so dust or other matter cannot leak into the gear housing. *Fort Worth Steel & Machinery Co., P.O. Box 1038, Fort Worth, Tex.*

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(Continued on page 206)

# The Right **EXPLOSIVES**



# Experienced **KNOW-HOW**



# Results **PAY OFF**



Hercules® Dynamite and Electric Blasting Caps, plus experienced "know-how," made possible these excellent blasting results in a traprock quarry.



Birmingham, Chicago, Duluth, Hazleton,  
Joplin, Los Angeles, New York,  
Pittsburgh, Salt Lake City, San Francisco

Hercules sales-engineers will be glad to assist in selecting the right combination of explosives and blasting methods to meet your particular requirements.

**HERCULES POWDER COMPANY**

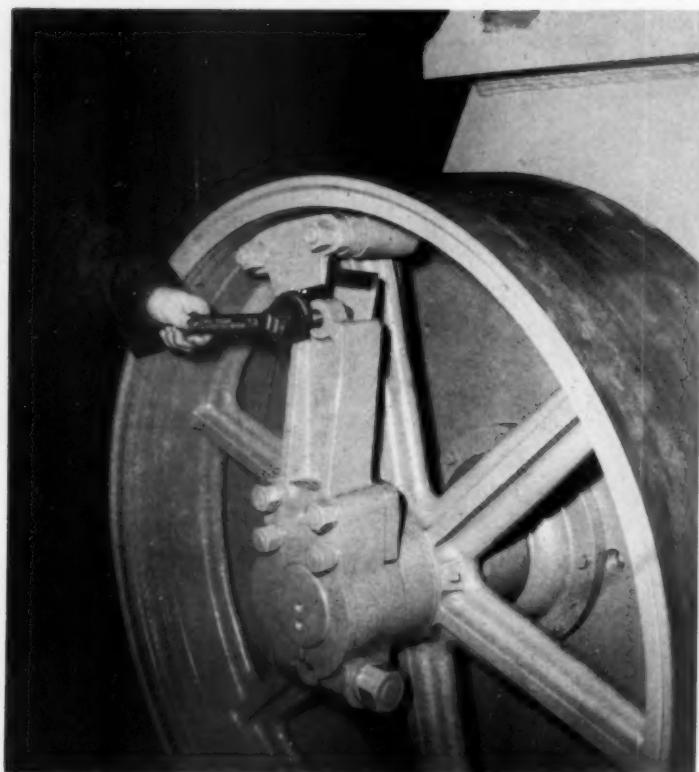
INCORPORATED

*Explosives Department, Wilmington 99, Delaware*

XRE



# This KUE-KEN® automatic flywheel release saves you downtime and costly repairs



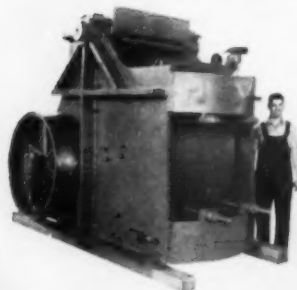
Tramp iron and overload can be damaging, but not to a Kue-Ken. If you have experienced broken frames or toggles with conventional crushers, then you will find in Kue-Ken an important savings advantage. On tramp iron or overload, Kue-Ken automatic control releases the flywheel and permits it to run free without ratcheting. On correction of the cause, the flywheel can be quickly reset and the crusher put back into operation without costly delays. It can be set to stop the motor automatically on release of flywheel or to sound an alarm. Kue-Ken gives the lowest cost per ton crushing. It has a built-in lubrication system with thorough lubrication that permits more crushing strokes per minute for greater capacity. Horsepower requirements are less. Regardless of your crushing requirements, see in the adjoining chart how a smaller, less costly Kue-Ken can provide the capacity you require.

Table of tons per hour that will pass through crusher with jaws set at dimension shown when measured in the closed position.

Table is based on crushing average hard, dry quartz or similar rock weighing at least 100 lbs. per cubic foot when crushed.

32 sizes available from 12" x 5" to 48" x 42".

Kue-Ken crusher size	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	5"	6"	Horsepower range
24" x 12"	22	26	32	36	43	50	56				15 to 30
30" x 12"	32	35	38	42	55	70	76	85	110		20 to 30
36" x 10"	38	47	57	67	80	91	105				25 to 40
36" x 20"				70	82	90	115	135	160		30 to 50
42" x 25"				90	120	150	165	180	215	250	40 to 60



Write for Catalog

## KUE-KEN® CRUSHERS

"Crushing without Rubbing"

**STRAUB MFG. CO., INC.** 8390 Baldwin St., Oakland 21, Calif.

Jaw Crushers Gyratory Crushers Overhead Eccentric Crushers Revolving Screens  
Classifiers Feeders Rib Cone Ball Mills Concentrating Tables Vibrating Screens

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.

Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

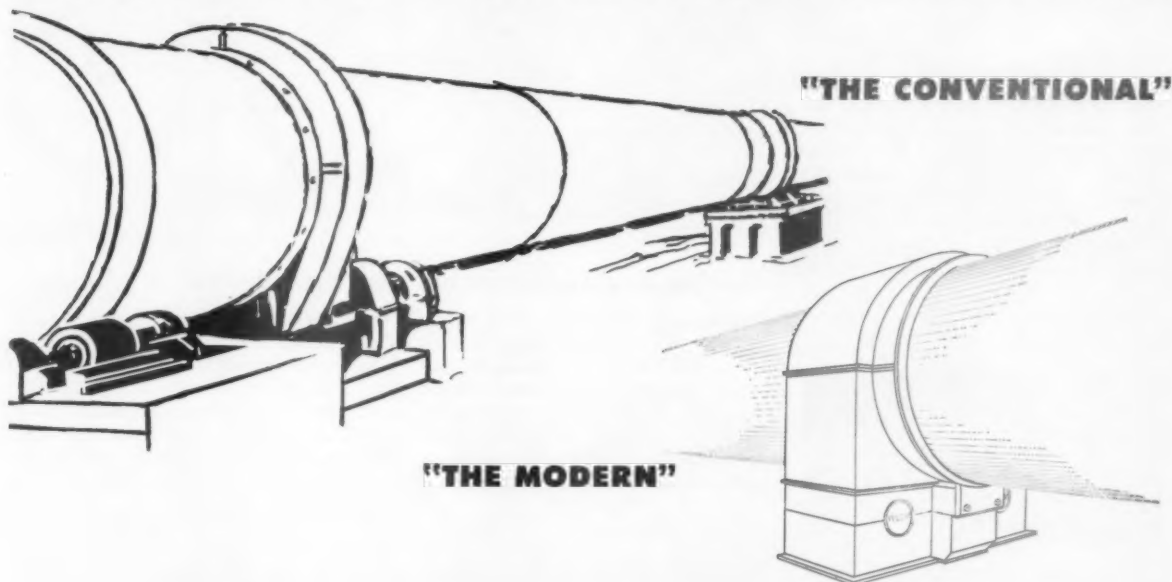
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SALT LAKE CITY, UTAH..... Lund Machinery Co.  
SAN ANTONIO, TEX..... Clossner Equipment Co.  
PORTLAND, ORE..... Contractors Equipment Co.  
LOS ANGELES, CALIF..... Garlinghouse, Framon Co.  
PHOENIX, ARIZ..... Stapley's  
DENVER, COLO..... Union Supply Co.  
CASPER, WYO..... Moss Equipment & Supply Co.  
VANCOUVER, B. C..... Universal Equipment Co.



# WHAT KIND OF A KILN DO YOU NEED ?



## VULCAN of WILKES-BARRE WILL DESIGN & MANUFACTURE ANY TYPE • FOR ANY APPLICATION

**CEMENT (WET-DRY) ... COKE ... LIME ...  
CALCINED DOLOMITE ... PIGMENTS ...  
NODULIZING ... AGGLOMERATING ... SINTERING**

Plus Kilns for many other related chemical and metallurgical processes. VULCAN: the oldest name in Rotary Kilns, is ready to take care of your every need. Top-flight engineers are constantly searching for new developments in this field. This is reflected by recent patent applications evolving the "New Concept in Rotary Kilns". Always highest quality material fabricated in a modern plant by skilled craftsmen . . . Every department co-ordinated for fast follow-through.

VULCAN designs, engineers, and manufactures Rotary Kilns . . . and items listed below. If you need a Rotary Kiln that is unusual in size . . . type . . . application . . . contact the "kiln specialists" . . . Contact VULCAN of Wilkes-Barre. Write or call today. Estimates, constructive suggestions and preliminary drawings will be furnished (as far as possible) without obligation.

**ANY INFORMATION ON ITEMS LISTED BELOW WILL BE SENT YOU IMMEDIATELY.**

Rotary Kilns, Coolers • Improved Vertical Lime Kilns • Cast Steel Sheaves, Gears  
Rotary Dryers • Automatic Quick Lime Hydrators • Steel Plate Fabrications  
Rotary Retorts, Calciners, etc. • Briquetting Equipment • Heavy Duty Sugar Mills

# VULCAN

## IRON WORKS

**WILKES-BARRE PENNSYLVANIA**

**"THE OLDEST NAME IN ROTARY KILNS"**

ESTABLISHED 1849 • CABLE ADDRESS: VULWORKS

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ROCK PRODUCTS, May, 1958

205

## NEW MACHINERY

(Continued from page 202)

### Car spotter

A NEW PORTA-FEEDER for the movement and spotting of mine cars has been announced. Model ZNCN features the positioning of the track unit, moving mechanism and hydraulic jacks on the external side of each rail on which the mine car runs.

The new unit was developed for handling possum belly cars with low clearance.

Model ZNCN also permits repairs to be made without clearing the track

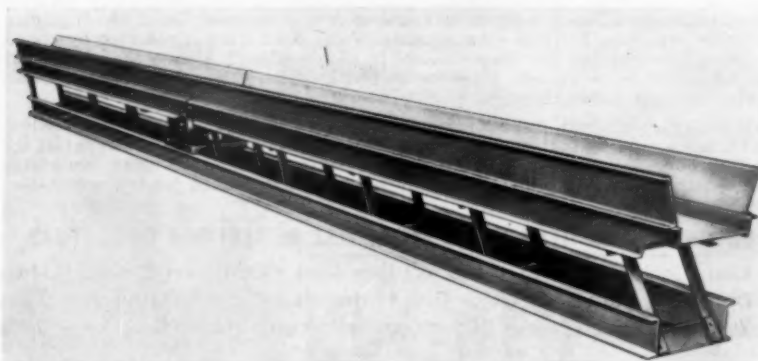


of cars. Each hydraulic jack can be pulled away from the center line of track and repaired. Mining and car-moving operations can thus be continued by moving and spotting the cars by locomotive.

Construction of the unit includes heavy plates with heavy angle and wear bars for the sliding cylinder head or carriage, and includes a cushion spring on the cylinder rod. The cross ties for positioning the machine are equipped with quick-locking clips. *The Nolan Company, Bowerston, Ohio.*

Enter 129 on Reader Card

### Shaker conveyor for handling of bulk materials



A NEW HIGH-SPEED SHAKER CONVEYOR offers wide application versatility. It can be used for high-speed conveying of most bulk materials including sand, gravel and stone. Fitted with heated or stepped troughs, it will dry, preheat or cool materials in transit. With screen decks, it simultaneously scalps, sizes or dewater and conveys, and also finds application as a manual picking table. It can be built to combine any of these functions.

The eccentric-driven unit, consisting of two equal length sections, is approximately 50 ft. long. Two or more units may be combined to make a conveyor of any length. *Syntron Co., 450 Lexington Ave., Homer City, Pa.*

Enter 130 on Reader Card



### Double payloads possible with dual trailers

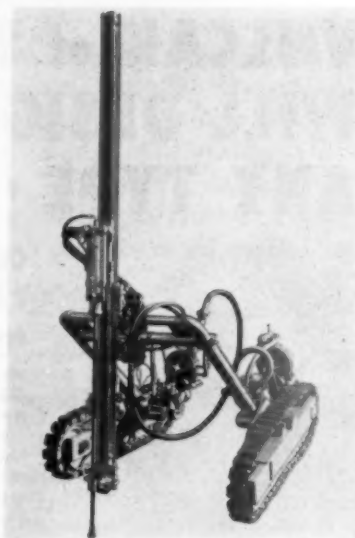
BONUS LOADER DUAL TRAILERS have been designed to operate as two 8 to 10-cu. yd. bottom-dump units in train. They are maneuverable, accomplishing a jackknife turn in as little as 31 ft. Cab-operated controls and air-powered, full-width spreader gates permit either trailer to dump on the run for full dump or windrow. A train dolly converts the second unit to an independent trailer. Every wheel is equipped with built-in electrical and air-connected air brakes. All-welded construction adds double strength to the high capacity rolled sides, and tapered ends stop air whipping load losses. *Clement-Braswell, Inc., Shreveport, La.*

Enter 131 on Reader Card

### Air-powered drill rig for use in rough terrain

A NEW AIR POWERED, tractor-type drill rig designed for hard-rock drilling in rough terrain is now available. A special U-bar construction and large-size air motors fit the unit for heavy drilling in hard-to-get-at places.

Carriage features of the rig include the U-bar design, two large air motors, automatic brakes, a geared final drive, spring loaded track takeups, built-in-line oiler and life-time lubrication. The feed shell has an air motor feed, a choice of control valves location, and



a standard 10-ft. feed travel. Drills are available in sizes of 3 1/8, 3 1/2 or 4 in.

The U-bar construction provides drilling flexibility through a 105 deg. vertical boom arc. The drill feed can be placed flat on the ground for toe hole drilling, horizontal 7 ft. above the ground for breast hole drilling, or in vertical position for down hole drilling. Complete independent movement of each track is obtained by hydraulically controlled track oscillation.

Available drills include the 3 1/8-in. H23DR, the 3 1/2-in. D25DR, or the 4-in. D14DR. *Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.*

Enter 132 on Reader Card

(Continued on page 210)

**Works 3500 hours  
continuously at . . .**



## **PAYLOADER®**

*"Our Model HO 'PAYLOADER' has now worked over 3500 hours in a day-and-night continuous production," says W. M. Gatewood, Asst. Plant Supt. of this Richmond, Va. producer. "It keeps the yard stockpile production moving, averaging 250 tons per hour without pushing. The pry-out bucket action digs packed materials faster and easier than another large loader on the job . . . has good balance and traction."*

You, too, can depend on a model HO or one of the other 4-wheel-drive "PAYLOADER" sizes because West's satisfaction is echoed from rock products plants all over the country. They prove that there is no substitute for Hough experience and "know-how" in tractor-shovel design — that assures you of higher output, easier operation and lower maintenance than you can get with any other tractor-shovel, size for size.

Your Hough Distributor would like you to prove it to yourself. See him today and ask about Hough Purchase and Lease Plans, too.



Now your Hough Distributor has at his disposal the broadest and most complete set of financing plans ever offered: — TIME PAYMENT . . . LEASING PLANS, with or without OPTION TO PURCHASE — any and all kinds of financing to best fit your needs for the purchase of "PAYLOADER" equipment. See him today.

### **THE FRANK G. HOUGH CO.**

705 Sunnyside Ave., Libertyville, Ill.

Send more data on 4-wheel-drive "PAYLOADER" tractor-shovels as checked:

- ☐ HO - 9,000 lb. Carry Cap. (1 to 4 cu. yd. buckets)
- ☐ HH - 7,000 lb. Carry Cap. (1 1/8 to 3 1/4 cu. yd. buckets)
- ☐ HU - 5,000 lb. Carry Cap. (1 1/8 to 2 1/2 cu. yd. buckets)

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Modern Materials Handling Equipment

**THE FRANK G. HOUGH CO.**

LIBERTYVILLE, ILLINOIS

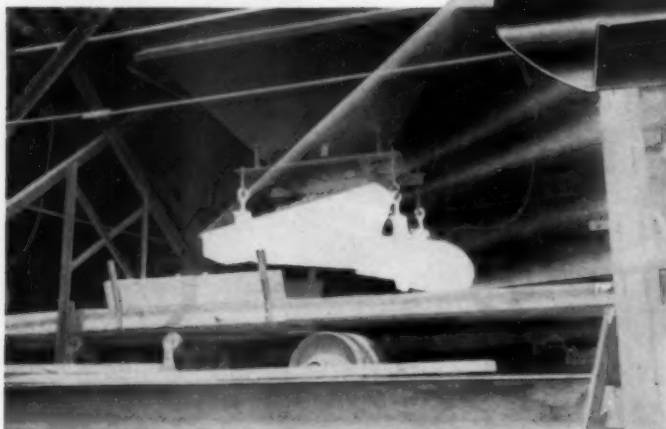
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# SYNTRON

"Vibra-Flow"

## VIBRATORY FEEDERS



**provide the controlled  
flow of bulk materials  
to processing equipment**

SYNTRON Vibratory Feeders are designed for high capacity, variably controlled feeding of bulk material to crushers, conveyor belts, screens and other process equipment.

Years of experience in the mining and quarrying industry have proven SYNTRON Vibratory Feeders to be . . .

**Efficient** — the instantly controlled rate of material flow and the high capacity of SYNTRON Feeders keep process equipment operating at maximum capacity. This means lower cost per ton.

**Dependable** — SYNTRON'S powerful electromagnetic drive assures a free flow of hard-to-handle

materials at higher tonnage rates. Simplicity of design means longer life, lower maintenance costs.

**Versatile** — Compact design makes SYNTRON Feeders easy to install on most operations. Can be suspended or floor mounted.

Their ability to handle most materials — fine powders or heavy run — of — quarry stone, damp or dry, hot or cold in capacities from pounds to hundreds of tons per hour make SYNTRON the best feeder you can buy.

There is a SYNTRON Feeder for every application large or small.

RP 758

***Builders of quality equipment for more than one-third of a century***

### **Other SYNTRON Equipment of Proven Dependable Quality**

***designed to increase production, cut production costs, improve products***

Vibrators  
(bins, hoppers, chutes)  
Vibratory Feeders  
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Shaker Conveyors  
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Packers and Jolters  
Hopper Feeders  
Lapping Machines  
Rectifiers  
(Silicon and Selenium)  
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Electric Hammers  
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Paper Joggers

**Our representatives will be glad to work with you in  
selecting the proper equipment for your operation.**

***Call your nearest Syntron representative***

**Write for a SYNTRON  
Illustrated Catalog — FREE**

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450 Lexington Ave.      Homer City, Penna.



Whenever performance counts . . .



## Grinding Balls

forged steel—none tougher

none harder—none more uniform



United States Steel Corporation—Pittsburgh  
Columbia-Geneva Steel—San Francisco  
Tennessee Coal & Iron—Fairfield, Alabama  
United States Steel Export Company

**United States Steel**

## NEW MACHINERY

(Continued from page 206)

### Malfunction detector

A VIBRATION SAFETY CONTROL was installed on a heavy-duty centrifugal impact mill delivered some months ago to a South American asbestos producer. Entoleter Division, Safety Industries, Inc., shipped a CentraMil Series 40 to Amveco C.A., subsidiary of World Commerce Corp. S.A., for the purpose of reducing tailings to smaller particles. After the milling operation, bits of usable asbestos are retrieved and applied to higher quality ores.

To accomplish the milling of these asbestos tailings, the rugged centrifugal



mill contains a 40-in. rotor weighing up to 600 lb. The rotor, equipped with special impactors, is capable of producing impact velocities in excess of 30,000 fpm.

The machine, with its high impact and velocity, was nevertheless designed for continuous, unattended operation. Safety protection was afforded by the automatic vibration detector that would shut down the installation automatically in the event of any malfunction. Following several hours of operation, the installation was shut off when its vibration detector triggered. Inspection showed a discarded burlap sack enmeshed in the large rotor.

Aeronautical and Instrument Division of Robertshaw-Fulton Controls, supplier of the vibration detectors, said their model 65A-EP-LS Vibraswitch was used on the impact mill supplied to Venezuela. This model, they said, is designed specially for protection of rotating and reciprocating equipment with normal vibration level above the 0-2 G range. It also is suitable for applications in hazardous locations. Robertshaw-Fulton Controls Co., Anaheim, Calif.

Enter 126 on Reader Card



### Trailer features spot dumping and spreading

NO TIME IS LOST BY THIS TRUCK when the trailer is raised or lowered. Model HD-2 pictured here has a 10 to 12-cu. yd. capacity. It is one of a line of frameless hydraulics offered in four basic models ranging from 8 to 22 cu. yd. The HD-2 can jackknife 180 deg. when necessary. Extreme offset tailgate hinges permit quick dumps. Other construction advantages include built-in hoist housing, hinged at the top of the load, and closely spaced crossmembers for extra strength. Lufkin Trailers, Lufkin, Texas.

Enter 127 on Reader Card

### Tractor loader adapts to eight different tasks

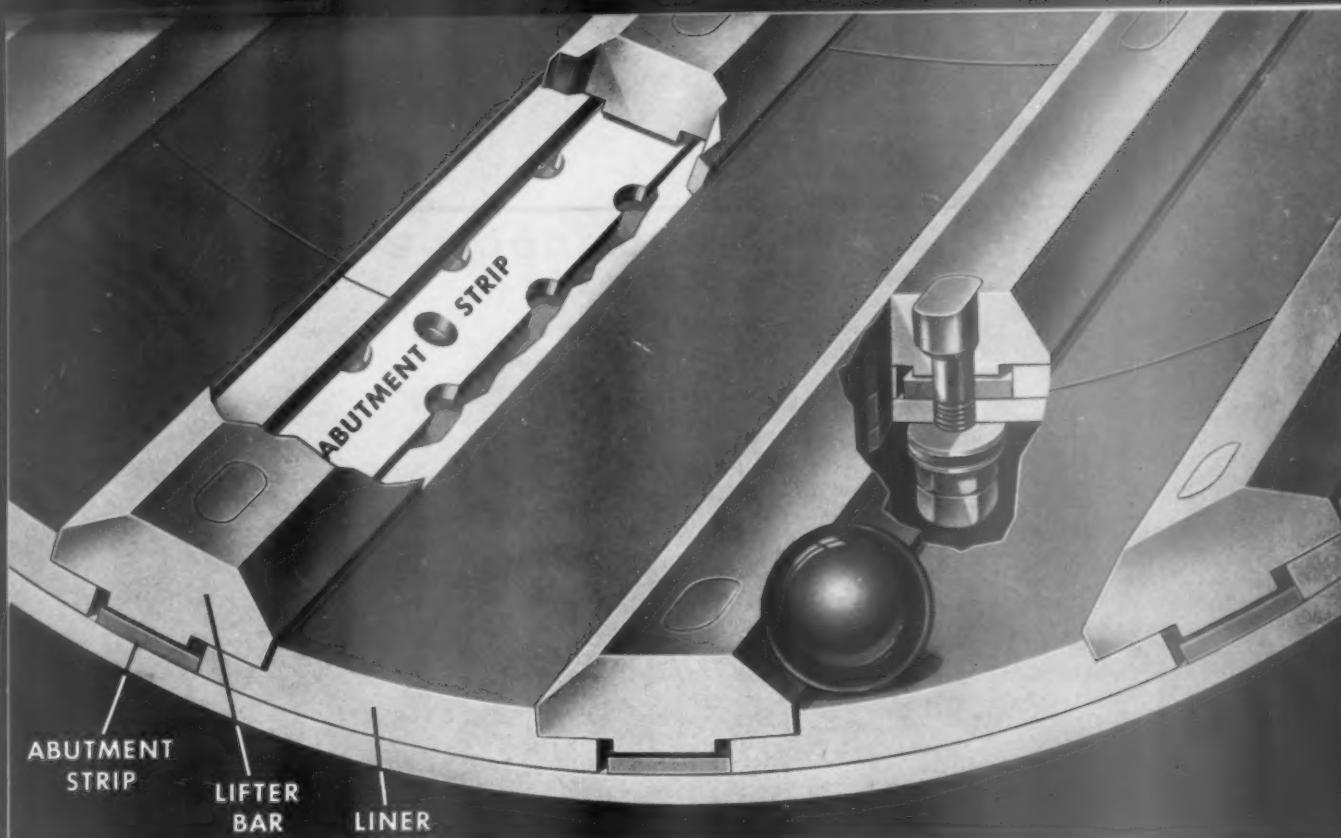


A MULTI-PURPOSE TRACTOR LOADER recently announced can be converted into eight different machines—loader, street sweeper, backhoe, fork lift, angle dozer, crane, rotary broom, and loader with scarifier. The Work Bull 1001 loader has a 43-deg. tilt back with 5,200 lb. of breakaway power. Its standard bucket has a 75-in. width with  $\frac{3}{4}$ -cu. yd. capacity. As a fork lift, it lifts 2,500 lb. to 10 ft. 5 in. With the tilt hydraulically controlled, the angle dozer has an 84-in. blade. With swinging crane, the 1001 has a 2,000-lb. capacity.

Hydraulically actuated reversing clutches are controlled by a combination accelerator-directional foot pedal. Maneuverability of the 1001 comes from power steering, individually controlled brakes, and five-speed transmission in both forward and reverse. A torque converter provides extra torque when required, and a special nitrogen accumulator cylinder serves as a shock absorber for the hydraulics when the unit is loaded and going over rough terrain. Lift arms may also be set in a float position so the attachment will ride with the contour of the terrain. Massey-Ferguson Industrial Division, 1009 South West St., Wichita, Kan.

Enter 128 on Reader Card

END



## New liner saves cement mill wear

Here's KENSINGTON's latest triumph in its *War Against Wear*... the new Oro-Lok Lining for cement grinding mills.

By combining superior, wear-resisting materials and improved design, this revolutionary new lining successfully overcomes the most common causes of wear, breakage, and excessive maintenance.

Briefly, here are just a few of the important improvements:

**Patented, welded-on abutment strip** reinforces shell at location of bolt holes.

**Bolts seldom loosen.** In conventional

linings, shocks and blows set up a shearing stress which causes bolts to loosen and break, thus requiring frequent, regular, and costly servicing. As seen above, Oro-Lok design *completely eliminates* this common cause of trouble because liner plates butt against abutment strips which absorb all lateral stress. Bolts are subject to tension only.

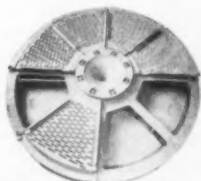
**OROLOY lifter bars outlast others.** OROLOY is a special super-hard, super-tough alloyed high-manganese steel. Not only is it hard to begin with, but it *actually fights back against wear* by developing

even greater surface hardness when subjected to impact of balls. You can expect OROLOY Lifter Bars to last as long as the liner itself... and when necessary, they can be easily renewed or reversed without disturbing rest of the lining.

**Needs no grouting-in.** Since not enough abrasive material can enter behind plates to cause serious scouring, there's no need for zincing or grouting-in.

For more information on the new ORO-Lok Lining and how much it can save *you*, phone or mail coupon today. You'll be under no obligation.

Other wear-resisting KENSINGTON replacement parts:



**DIVISION HEAD SECTION**  
for grinding mill has exclusive design features which greatly prolong service life.

**SCREENS, GRATES, LINERS**

and other alloyed manganese steel replacement parts fit all standard cement mills.



**CHAINS, SPROCKETS**

150 different standard chains and sprockets plus many special models... all of wear-defying KENKROME.

**KENKROME ELEVATOR BUCKETS**

for outlast ordinary fabricated buckets wherever abrasion and impact are important factors.



# Kensington STEEL

**KENSINGTON STEEL**, Dept. R, 505 Kensington Ave., Chicago 28, Ill.

DIVISION OF POOR & CO., CHICAGO

- ☐ Please send more information on ORO-Lok Lining.  
☐ Please quote prices.

Description of mill: Make \_\_\_\_\_

Model \_\_\_\_\_ Present Liner Thickness \_\_\_\_\_

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

# MANUFACTURERS

## NEWS

### Blackie urges retaining of reciprocal trade act

EXTENSION OF THE TRADE AGREEMENTS ACT for a period of not less than five years, was urged in testimony given by William Blackie, executive vice president, Caterpillar Tractor Co., Peoria, Ill., before the House Ways and Means Committee, Washington, D.C., February 21, 1958.

In testifying before the committee he said, "The jobs of millions of Americans are 'protected' not by tariffs designed to obstruct the inflow of foreign goods but by the ability of companies like ours to export. If we are able to help our country by helping ourselves, we need more opportunity to export, not less."

Mr. Blackie named new handicaps which are faced in doing export business: (1) the apparent business turn-down in the United States will have a related depressing effect upon the economy of a number of other countries, partly because fear spreads rapidly; (2) the need for imported raw

materials will decline, because of reduced consumption within the United States; and (3) the money earned by foreign countries through sales to this country will decline, because of the compounding of the lower volume at the lower prices induced by the lessened demand. According to Mr. Blackie, restriction of imports under these conditions would only make matters worse.

### Walter McComb retires

THE FLEXIBLE STEEL LACING CO., Chicago, Ill., has announced the retirement of Walter McComb, vice president and general superintendent. Mr. McComb, who joined the company in 1918, was appointed general superintendent in 1940, and in 1956 was elected vice president. He will be succeeded as general superintendent by Frank McComb.



### R. L. Williams appointed advertising manager

PROMOTION OF ROBERT L. WILLIAMS to advertising manager of Gardner-Denver Co., Quincy, Ill., has been announced by G. V. Leece, president. Mr. Williams was formerly assistant advertising manager for the industrial products division. He was advertising department manager of the Keller Tool Co. at the time of the company's merger with Gardner-Denver.

### Associated Equipment Distributors elect officers



HERE ARE AED's 1958 OFFICERS, elected at the Association's 39th annual meeting held January 26-30 at the Conrad Hilton Hotel in Chicago, Ill. Seated, left to right, are Jewel A. Benson, Benson Tractor Co., Houston, Texas, vice president; J. R. Borchert, Borchert-Ingersoll, Inc., St. Paul, Minn., treasurer; H. D. Anderson, Rish Equipment Co., Bluefield, W. Va., president, and F. J. Fitzpatrick, Parker-Danner Co., Hyde Park, Mass., executive vice president. Standing, left to right, are P. D. Hermann, AED executive secretary; H. T. MacDonald, Kane Equipment Ltd., Winnipeg, Man., Canada, vice president, and F. R. Cooper, Howard-Cooper Corp., Portland, Ore., vice president.

### Joins Meckum Engineering

PETER J. MECKENSTOCK has joined the sales training program of Meckum Engineering, Inc., Ottawa, Ill., before possibly stepping forth as a sales engineer. Mr. Meckenstock, a graduate of Purdue University with a degree in mechanical engineering, is the son of J. W. Meckenstock, president of the company.

### Modern Engineering changes

MODERN ENGINEERING CO., St. Louis, Mo., has announced the following executive assignments: I. F. Fausek, chairman of the board; I. F. Fausek, Jr., president; Willis L. Reedy, vice president, production; Al V. Fausek, vice president, sales; James F. Fausek, vice president, industrial sales; Robert E. Bird, secretary.

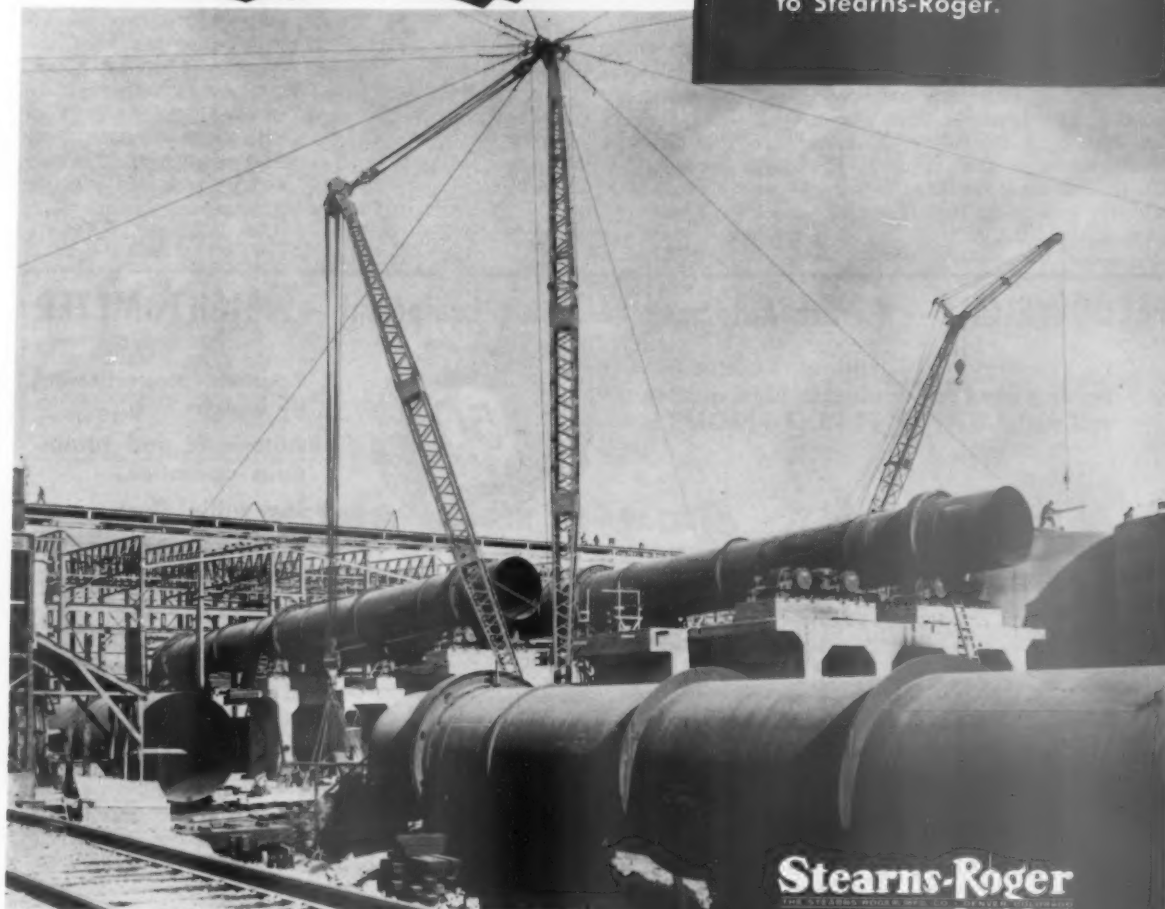
(Continued on page 214)



**STEARNS-ROGER BUILT**  
for

**THOUSANDS  
OF BARRELS OF  
CLINKER**

Two cement kilns each ten feet in diameter by four hundred feet long represent but one step in Stearns-Roger's complete service for design, engineering, fabrication and construction of cement plants. Call on the skill of qualified engineers working from long experience. For a smooth running plant, give the assignment to Stearns-Roger.



**Design, Engineering, Fabrication, Procurement, Construction**

**Stearns-Roger**  
THE STEARNS-ROGER COMPANY, LTD. DENVER, COLORADO

DENVER, HOUSTON, EL PASO, SALT LAKE CITY  
STEARNS-ROGER ENGINEERING COMPANY, LTD.  
CALGARY

## MANUFACTURERS NEWS

(Continued from page 212)

### Continental Can enters multiwall bag business

THE CONTAINERBOARD AND KRAFT PAPER DIVISION of Continental Can Co., New York, N.Y., has set in motion its plans to enter the multiwall bag business with the appointment of D. Harold Johnson as manager of multiwall sales. It will be Mr. Johnson's responsibility to coordinate the manufacturing and sales promotion of the new line.

A past director of the Paper, Shipping and Sack Manufacturing Association, Mr. Johnson was formerly with the Virginia-Carolina Chemical Corp., Richmond, Va., where he was manager of the bag division.

### Airco district managers

ACCORDING TO AN ANNOUNCEMENT by Air Reduction Sales Co., New York, N.Y., N. F. Moody has been appointed Philadelphia district manager, replacing E. B. Walker who has retired after 34 years of service. H. F. Colt, Jr. has been appointed to succeed Mr. Moody as Boston district manager.



### Richard J. Mills named general sales manager

THE APPOINTMENT of Richard J. Mills to the position of general sales manager, American Hoist & Derrick Co., St. Paul, Minn., has been announced by John E. Carroll, president. Mr. Mills joined the company in 1946 after attending the University of Minnesota, and has served in various capacities, most recently as regional manager of the eastern district.

### Hercules Powder appointees

THE APPOINTMENTS of Dr. Lyman G. Bonner to the newly created position of director of development, explosives department, and Dr. L. G. Maury as manager, explosives research division and high pressure laboratory at its research center, have been announced by Hercules Powder Co., Wilmington, Del.

Dr. Bonner joined the company in 1944 as a research associate at its Allegheny Ballistics Laboratory, and served as technical director from 1945 to 1955 when he was transferred to the research center.

Dr. Maury, a graduate of the Illinois Institute of Technology, joined the company in 1951 as a research chemist, and in 1955 became supervisor of the high pressure laboratory.

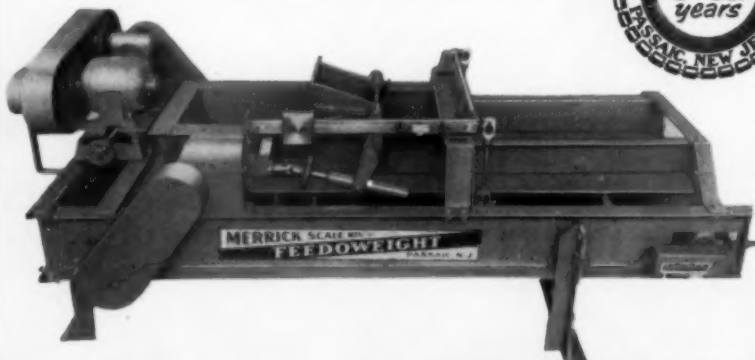
### New Sika sales managers

THE APPOINTMENT of two new district sales managers has been announced by Sika Chemical Corp., Passaic, N.J. John C. Weber will be in charge of metropolitan New York area sales with offices in Passaic. Robert I. Geyer, formerly a sales engineer in the New York area, will head the Chicago district office.

(Continued on page 216)

## FEEDOWEIGHT — Merrick Automatic Weighing Equipment — WEIGHTOMETER

For Feeding and Blending: Reduce your operating costs and maintain high quality control with "Merrick" FEEDOWEIGHTS.



- \* Accurate proportioning by weight.
- \* Automatic and continuous operation.
- \* Low initial Cost.
- \* Minimum Maintenance and attention.

Model "WL"

From fractional rates up to 65 tph.

Model "WS"

From fractional rates up to 1000 tph.

### Model "WL" FEEDOWEIGHT

Manual or automated control systems available for single or group installations for use in CEMENT, MINING, CHEMICAL and other industries where blending or proportioning of bulk materials is desired.

For continuous weighing of materials on belt conveyors the Merrick "WEIGHTOMETER" enjoys universal acceptance.

# MERRICK SCALE MFG. CO.

192 Autumn St.,  
Passaic, N. J.

# 40 TO 400 MESH OUTPUT UPPED AS MUCH AS 300%



## ENGINEERING AIR SEPARATORS TO SPECIFICATION

... comes naturally to Sturtevant engineers. They have a tradition of success in developing dry-processing equipment and plants for more than 75 years — from the first rock emery mills to the most modern fluid jet micron-grinding equipment. If your problems include any of the processes listed in the coupon, it will pay you to investigate.

## WHAT CAN A STURTEVANT AIR SEPARATOR DO IN YOUR PULVERIZING SYSTEM?

In the cement industry, Sturtevant Air Separators have a tested record of increasing mill capacities from 25 to 300% while lowering power consumption as much as 50% — when used in closed circuit with grinding mills. Maybe they can do as well for you.

Easily adaptable to your materials. Sizes of Sturtevant Air Separators range from 3 to 18 feet in diameter. They deliver fines from 40 to 400

mesh at rates as high as 100 tons per hour.

**Designed to cut costs!** Sturtevant Air Separators are built for a lifetime of low-downtime service. Rugged construction plus easy accessibility for quick maintenance (typified by the "OPEN-DOOR" design in other Sturtevant equipment) assures more output per machine-year. Check the coupon for more information.

# STURTEVANT

## Dry Processing Equipment

The "OPEN-DOOR" to lower operating costs over more years

CRUSHERS • GRINDERS • MICRON-GRINDERS • SEPARATORS  
BLENDERS • GRANULATORS • CONVEYORS • ELEVATORS

ROCK PRODUCTS, May, 1958

My dry-process materials are: \_\_\_\_\_  
Desired capacity is: \_\_\_\_\_  
Name \_\_\_\_\_ Title \_\_\_\_\_  
Firm \_\_\_\_\_ Street \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

STURTEVANT MILL COMPANY, 102 Clayton Street, Boston 22, Mass.

Please send me your bulletin on Air Separators

Also bulletins on machines for:

- |  |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| <input type="checkbox"/> CRUSHING            | <input type="checkbox"/> GRINDING    | <input type="checkbox"/> PULVERIZING |
| <input type="checkbox"/> MICRON-GRINDING     | <input type="checkbox"/> SEPARATING  | <input type="checkbox"/> BLENDING    |
| <input type="checkbox"/> SUPERFINE SELECTING | <input type="checkbox"/> GRANULATING | <input type="checkbox"/> CONVEYING   |

Enter 1021 on Reader Card

## MANUFACTURERS NEWS

(Continued from page 214)

### Kenneth Lindsay honored

DEALERS for Iowa Manufacturing Co., Cedar Rapids, Iowa, turned the tables on Kenneth Lindsay, Sr., executive vice president of the company, when they awarded him an "Oscar" at the annual dealer meeting in Chicago. It is at this meeting that Mr. Lindsay regularly awards an Oscar to the dealer who has made the greatest sales effort in the promotion of Cedarapids aggregate and bituminous mixing equipment during the past year.

Mr. Lindsay's Oscar consisted of a brief case containing a plaque, congratulatory letter from each of the dealers, and tickets for a Caribbean cruise.

### F. Mardulier named manager

THE APPOINTMENT of Francis J. Mardulier as manager of cement mill products, Dewey and Almy Chemical Company Division of W. R. Grace & Co., Cambridge, Mass., has been announced. With 23 years of experience in the cement field, Mr. Mardulier is currently a subcommittee chair-

man of Committee C1 of the American Society For Testing Materials, and is a member of the American Concrete Institute and the Harvard Engineering Society.

### L. B. Coleman named advertising manager

LESTER B. COLEMAN has been appointed advertising manager of the Flexible Steel Lacing Company, Chicago, Ill. Mr. Coleman joined the company in 1950 as its northeastern field engineer. In addition to his new assignment, he will continue to handle various sales department duties.

### H. K. Porter appointees

DAN D. WILLIAMS has been appointed assistant general sales manager and Curt K. Wiley has been named Pittsburgh district sales manager, Refractories Division, H. K. Porter Company, Inc., Pittsburgh, Pa. Mr. Wiley was formerly president of the Gem Clay Forming Co., Sebring, Ohio.

Mr. Williams was previously with E. J. Lavino and Co. in various sales positions since 1950. A graduate of Princeton University, he is a member of AIME.

### Made Raymond sales manager

DEANE F. WICKS has been named sales manager of the Raymond Bag Corp., Middletown, Ohio, according to an announcement by J. R. Clements, president. Succeeding Mr. Wicks as eastern district sales manager is T. H. Bacon.

### E. A. Murray promoted

EDWARD A. MURRAY has been named assistant vice president of sales according to an announcement by the American Steel & Wire Division, United States Steel Corp., Cleveland, Ohio. Mr. Murray, who joined the company in 1934, formerly was sales manager of the Chicago district office.

### Electra Motors opens office

ELECTRA MOTORS, INC., Anaheim, Calif., has opened a new office in Chicago, Ill., for direct sales and service to Illinois, Indiana and Wisconsin. William A. Greaves has been named midwestern division manager. William D. Funk, district sales manager, will be in charge of the office. Sanford Novitt will serve as inside sales engineer for the area.

(Continued on page 218)

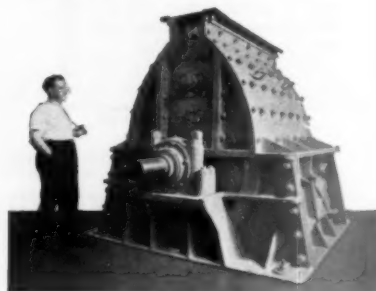
SINCE 1885 — GRUENDLER QUALITY THE BEST THAT MONEY CAN BUY  
GRUENDLER HEAVY DUTY REDUCTION CRUSHERS



1. Heavy Feeder Type Breaker Plate Hammer Crusher  
For handling damp sticky shale without choke or interruption.

## For Producers of Cement and Crushed Stone

Versatile! Adjustable! Sturdily constructed for a lifetime of service. Minimum down time.



2. Center-Feed Impactor with patented deflector bar  
For the production of fine aggregates. Increases capacities of Ball or Compeb Mills.

1. Moving heavy manganese breaker plate force feeds, has 20 to 30 times more life over the conventional type. Produces a cubical specification stone for use in highway construction and is popular in Cement Plants where tremendous capacities and around the clock duty is required.
2. The Center-Feed Impactor has a patented deflecting intake flow to either side which reduces high drop and minimizes wear on rotor and discs, a very important advantage when the production of fines at a low cost per ton is necessary in a continuous operation.

WRITE DEPT. R.P.-558 FOR ILLUSTRATED BULLETIN



# GRUENDLER CRUSHER & PULVERIZER CO.

2915 N. Market St., St. Louis 6, Mo.

ROCK PRODUCTS, May, 1958

Enter 1102 on Reader Card





## BIG PROJECTS PROVE IT!

**Firestones move more yards per hour on every shift!**

From the Texas Tumpike to the Niagara Thruway, Firestone Rock Grip Tires with S/F (safety-fortified) Nylon are reducing breakdown losses, cutting tire costs. Tough Firestone cord bodies withstand severest punishment to last longer with less downtime than any other tire! Two great non-directional tread designs adapt these off-the-highway tires to any job condition and eliminate excessive spare tire inventories. You get the *floatation and traction* you need in loose earth and wet going. With the same tire you get S/F Nylon's armored protection for hauls over splintered shale and blasted rock. Firestone tires resist cuts and slugging impacts like no other tires made. Ask your Firestone Tire Expert about these *tubed or tubeless* extra heavy-duty tires. Call him today at your Firestone Dealer or Store.



# Firestone

BETTER RUBBER FROM START TO FINISH

Enjoy the Voice of Firestone on ABC television every Monday evening.  
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ROCK GRIP WIDE BASE

ROCK GRIP

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ROCK PRODUCTS, May, 1958

217

## GILSON TESTING SCREEN

**SIZE-TESTS  
CRUSHED  
STONE  
GRAVEL  
SAND  
ALL ROAD AGGREGATES**



Makes 2 to 7 separations simultaneously in five minutes or less per complete test. Size range: 4-inch to 200 mesh. Sand Attachment optional for handling 8-inch sieves.

**Write for catalog  
describing Gilson Improvements  
and New Optional Accessories  
and Equipment**

The Gilson Testing Screen is the Standard Sizing Control of the Industry

**GILSON SCREEN CO.**  
MALINTA, OHIO

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## MANUFACTURERS NEWS

(Continued from page 216)

### Angus MacDonald appointed director of engineering

ANGUS MACDONALD has been named director of engineering of both the Military Electronics Center and the Communications and Industrial Electronics Division, Motorola, Inc., Chicago, Ill. Mr. MacDonald, a graduate of Yale University, joined the company in 1953 as an engineering staff assistant. He has also served as chief engineer for two-way and mobile equipment.



### T. Brumagin named manager

APPOINTMENT of Thomas H. Brumagin as general sales manager has been announced by Harley E. Northrop, president of the Ajax Flexible Coupling Co. Inc., Westfield, N.Y.

### Kaiser Chemicals expands refractory research program

RESEARCH FACILITIES at the Milpitas, Calif., laboratories of the Kaiser Chemicals Division, Kaiser Aluminum & Chemical Corp., Oakland, Calif., have been expanded to permit consolidation of the division's basic refractory and magnesia research activities. The step is part of a plan to organize research into several cooperating sections. The new program will be directed by James C. Hicks, who formerly was director of refractories research at Milpitas.

### New Davey service manager

APPOINTMENT OF R. G. MYERS as parts and service manager, Davey Compressor Co., Kent, Ohio, has been announced by Paul H. Davey, Jr., president. Mr. Myers has been southwestern district manager since 1953.

(Continued on page 220)

## "CROSS HEXSCREEN"

*A Honey of a Screen*

**for  
MORE  
STRENGTH  
MORE  
CAPACITY**

**and  
ENGINEERED  
PERFORMANCE**

Look for this stamp on all "Cross" Products



Service of Cross Field Engineer and Technical Data on Request

**CT** THE SIGN OF PLUS QUALITY for PLUS PERFORMANCE

**CROSS Perforated Steel Sections and Decks for  
VIBRATING - SHAKING - REVOLVING SCREENS  
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**BLACK'S  
DREDGE  
SLEEVE  
CLAMPS**

STURDY • PRACTICAL • DEPENDABLE • ECONOMICAL



Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U. S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply . . . positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC., 503 9th Ave., Mendota, Illinois

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"400 Million Years  
at Hard Labor  
and No Time Off"

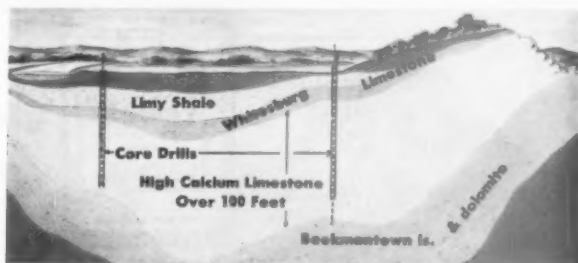


Nearly half a billion years ago, during the Ordovician Age, nature "planted" the essential elements to form more than 100 million tons of 97.8 per cent pure limestone in one area along the Norfolk and Western.

Although some of the beds are more than 100 feet thick, much of this superior limestone lies close to the surface and can be quarried at minimum costs.

Users of high quality calcium or dolomitic limestone are invited to inspect field and laboratory research studies confirming mining costs and limestone purity, and to examine maps showing the strategic locations of these extensive deposits . . . as well as other pertinent facts regarding *The Land Of Plenty's* many other industrial advantages.

N&W plant location men will be glad to work with you in confidence and without obligation.



This diagram indicates the extent and depth of a typical limestone deposit in *The Land Of Plenty*. N&W claims relating to quantity, quality and accessibility are supported by the scientific findings of professional geologists and an independent testing laboratory.

Write, wire or call—

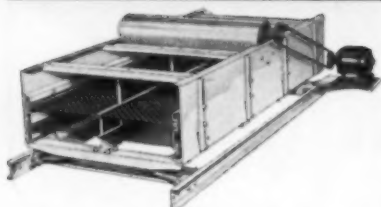
L. E. WARD, JR., Manager  
INDUSTRIAL AND AGRICULTURAL DEPT.  
Drawer RP-798 (Phone Diamond 4-1451, Ext. 474)  
NORFOLK and WESTERN RAILWAY  
Roanoke, Virginia



**Norfolk and Western**  
**RAILWAY**

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**FOR PROFITABLE  
SCREENING USE  
UNIVERSALS**



- FAST, SIMPLE, RUGGED
- DEPENDABLE
- ECONOMICAL
- STOCK DELIVERIES
- FAST SERVICE

Write today for free catalog No. 150  
on screens and screening

**UNIVERSAL  
VIBRATING SCREEN CO.**  
Racine, Wisconsin  
Quality Screens Since 1919

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## MANUFACTURERS NEWS

(Continued from page 218)

### SKF Industries appointees

TWO EXECUTIVE APPOINTMENTS have been announced by Edwin R. Broden, president of SKF Industries, Inc., Philadelphia, Pa. Thomas W. Dinlocker, vice president and director of the company, was appointed chairman of the finance committee of the board of directors. William J. Wiley was elected vice president in charge of finance, and will assume direction of the financial division.

### Owatonna Tool appointees

THE APPOINTMENT OF C. Kyle Peterson as advertising manager, Owatonna Tool Co., Owatonna, Minn., has been announced. Mr. Peterson replaces J. P. Heihn. Also announced, was the appointment of Robert H. Brown as sales promotion manager, succeeding Douglas Loth.

### Hewitt-Robins managers

J. R. BRANDON has been appointed manager of the newly organized field service department, Industrial Products Division of Hewitt-Robins, Inc.,

Stamford, Conn. Also announced was the appointment of J. H. Hayden, Jr. to product manager of conveyor equipment sales, Robins Conveyors Division, Passaic, N.J.

Mr. Brandon joined the company in 1952 as a service engineer and in 1953 was promoted to manager of the service department in Passaic. Mr. Hayden started as a sales trainee in 1954 and in 1955 became field engineer in the Charlotte, N.C. district.

### Bemis celebrates centennial year

THE 100TH ANNIVERSARY of the founding of Bemis Bro. Bag Co., St. Louis, Mo., will be observed throughout 1958. Anniversary activities are under the general direction of a centennial planning committee headed by A. H. Clarke, retired vice president. The committee has developed an "anniversary atmosphere" for activities and programs, as well as special materials for centennial projects.

Principal anniversary event at Bemis plants and offices will be open houses for employees and their families. The company was founded in 1858 in St. Louis, by Judson Moss Bemis.

END

## REDUCE YOUR RATIO



## OF FUEL-to-CEMENT

In these days of increasing fuel and labor costs, every economy you can make is important. Here is a sure way to SAVE FUEL. Cambridge Gas Analyzers will provide the Burner with a continuous and simultaneous record of the oxygen, carbon dioxide, and combustibles in the flue gas. O<sub>2</sub> analysis serves to warn against excessive air supply; combustibles analysis indicates oxygen demand under all conditions; CO<sub>2</sub> analysis reflects state of calcining process. Cambridge Instruments make uniform kiln operations possible with ease. Savings effected pay for installation in short time.

Send for literature

CAMBRIDGE INSTRUMENT CO., INC.  
3547 Grand Central Terminal,  
New York 17, N.Y.



## CAMBRIDGE GAS ANALYZERS

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

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In a Hayward, there's no contact between the closing mechanism and the material handled. This means much less wear, reduced upkeep, big savings in bucket maintenance. THE HAYWARD COMPANY, 50 Church St., New York 7, N.Y.

## HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES  
famous for performance since 1888

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## CONTRACT CORE DRILLING

EXPLORATION FOR MINERAL DEPOSITS  
INCLUDING URANIUM & LIMESTONE — ANYWHERE

FOUNDATION TEST BORING

GROUT HOLE DRILLING

Skilled crews and complete stock of core drills  
and accessory equipment maintained at all times

Core Drill Contractors for more than 60 years

**JOY MANUFACTURING CO.**  
Contract Core Drill Division  
MICHIGAN CITY, INDIANA

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Dump body mounted on Dodge 900 chassis with Custom cab.

## **Dodge Heavy-Duty Finance Plan is designed to save you money!**

Need a new truck, but need to watch your working capital, too? The Dodge retail finance plan for heavy-duty trucks was designed for just that situation. It lets you operate modern, efficient trucks without burdening yourself with excessive finance charges.

Designed with the same understanding of truck problems that has made Dodge *Power Giants* outstanding, the Dodge Heavy-Duty Retail Finance Plan is tailored to your needs. Whether you need one truck or several, you can finance your purchase with a minimum down payment, and with lowest financing cost. Payments can be arranged over an extended period.

What kind of equipment can be financed with this

plan? Any Dodge medium-duty, heavy-duty (400 through 900 models) or four-wheel-drive trucks, plus extra equipment, including bodies mounted on the trucks.

This new plan makes it both easy and economical for you to get *Power-Giant* advantages: exclusive Power-Dome V-8 engines that keep maintenance at a minimum . . . rugged "Job-Rated" construction . . . famous Dodge economy and dependability . . . advanced Dodge styling.

Let your Dodge truck dealer show you how this Heavy-Duty Retail Finance Plan helps truck operators with established credit own thrifty new Dodge *Power Giants*. See your dealer soon.

# **DODGE *Power Giants***

# WHAT'S YOUR DIGGING PROBLEM?



These two different jobs show you how you can always rely on Lorain reliability — regardless of the job requirement — regardless of the size you need. From  $\frac{3}{8}$  to  $2\frac{1}{2}$  yards as shovels, 7 to 75 tons as cranes, on crawlers or rubber tires — Lorain has profit-producers for your job.

• **MESHBERGER STONE CO., INC., Columbus, Ind.**

uses its 2-yard Lorain (above) around the clock to dig and load limestone from an 18-ft. face into trucks. It works 22 hours out of 24. MESHBERGER OWNS 4 LORAINS.

• **OPITZ SAND & GRAVEL CO., Denton, Texas**

OWNS 3 LORAINS. At right, its  $1\frac{3}{4}$ -yard Lorain Dragline with 70-ft. boom loads out sand and gravel at a washing plant. It also strips 20 foot of overburden. This Lorain has handled 3,000 yards in a 10-hour day — sufficient to easily keep up with plant capacity.

• Many models of the complete Lorain shovel-crane line have the following profit-producing features: the stronger, yet lighter, Lorain square-tubular-chord crane boom; 2-lever, "Joy-Stick", air power controls that permit easy, effortless, simpler operation; and the modern "Shear Ball" turntable mounting which eliminates the constant adjustment, maintenance and lubrication problems of other designs. See your Thew-Lorain Distributor for details.

THE THEW SHOVEL CO., LORAIN, OHIO



**THEW**  
**LORAIN**  
RELIABILITY IN ACTION

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ADVERTISER \_\_\_\_\_

BY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, ZONE & STATE \_\_\_\_\_

Remittance Enclosed

Terms: 10 days after receipt of invoice

Mail to: ROCK PRODUCTS, Where To Buy Dept., 79 West Monroe St., Chicago 3, Illinois

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to appear in  
issue(s) checked

RATES FOR ONE INSERTION

Column Inches	Rate Per Column Inch
Used	
1-3	\$9.00
4-8	8.60
9-14	8.40
15-19	8.20
20-30	7.80

Lower rates on a contract basis.  
Write for rate card.

FORMS CLOSE  
12th of MONTH  
PRECEDING PUBLICATION

Jan. . . . . July . . . . .

Feb. . . . . Aug. . . . .

Mar. . . . . Sept. . . . .

Apr. . . . . Oct. . . . .

May . . . . . Nov. . . . .

June . . . . . Dec. . . . .

CHECK MONTHS  
AD TO APPEAR

Aerial Tramway, bicable, 9470 ft. long; 50 t.p.h. capacity; Driving mechanism including steel engine frame, pillow blocks, hand operated brake, 30" grooved pulleys with four C144 belts; Bucket spacer with signal device; Track cable oiler; 65 buckets, 10 cu. ft. 1000 lb. capacity; Howe monorail 2000 lbs. recording beam.

This equipment was operated by a 25 h.p. motor. It is located at Wingdale, New York, was used for a short time in a government operation and appears to be in good condition. Will be sold where is-as is, or dismantled. Must be removed prior to July 1st.

Write Ad, T & RS, Inc.

Box 309, Wingdale, New York

### EQUIPMENT FOR SALE

631 Page Elec. Drag, 200', 8 yd.  
9-W Bucyrus Monaghan Elec. Drag, 200', 8 yd.  
2400 Lima Dragline, 130', 5 yd.  
4500 Manitowoc Drag, 120', 5 yd.  
111-M Marion Dragline, 80', 4 yd.  
1201 Lima Dragline, 85', 3 yd.  
54-B Bucyrus Erie Drag, 80', 2½ yd.  
95 Northwest Drag, 70', 2½ yd.  
38-B Bucyrus Erie Drag, 45', 2 yd.  
170-B Bucyrus Erie 6½ yd. Elec. Shovel  
150-B Bucyrus Erie 6 yd. Elec. Shovel  
120-B Bucyrus Erie 4 yd. Elec. Shovel  
1201 Lima 3½ yd. Standard Shovel  
54-B Bucyrus Erie 2½ yd. Standard Shovel  
80-D Northwest 2½ yd. Standard Shovel  
25 Northwest ¾ yd. Backhoe Unit 1020 ¾ yd. Shovel  
Also, smaller Shovels & Draglines  
Euclid Trucks—Rear & Bottom Dump  
400 Reich Truck Mounted Rotary Air Drill  
600 Reich Heavy Truck Mounted Rotary Air Drill  
750 Reich Heavy Truck Mounted Rotary Air Drill  
Shovel, Dragline, Backhoe Attachments Buckets and Dippers  
Doxers, Scrapers, Graders, Front End Loaders.

### FRANK SWABB EQUIPMENT CO., INC.

313 Hazleton Nat'l. Bank Bldg.  
Hazleton, Pa. Gladstone 5-3658

### LIQUIDATION

KILNS—COOLERS—DRYERS  
2—Vulcan 8 x 150 Rotary Kilns  
1—Vulcan 6' x 50' Rotary Kiln  
2—Ruggles Cole 90" x 55' Rotary Dryers  
1—Christie 80" x 65' Rotary Dryer  
1—Rennenburg 5'6" x 50' Rotary Dryer  
3—Link Belt 11'6" x 36', 6'4" x 24', 5'2" x 20' Roto Louvre Dryers  
PULVERIZERS—MILLS—CRUSHERS  
1—Allis Chalmers 7' x 24' two compartment Compeb Mill 450 HP motor  
1—Allis Chalmers 5' x 22' steel lined Tube Mill 200 HP motor  
1—Hardinge 5' x 10' Rod Mill  
2—54" x 24" double roll Crushers  
1—Symons 30" Impact Crusher  
SCREENS—CONVEYORS—BINS  
4—Tyler Hummer 4' x 10', 3' x 5' Vibrating Screens  
5—Link Belt, Allis Chalmers 3' x 8' Screens  
1—Symons 3' x 8' double deck Screen  
2—42" Apron Conveyors 65' long  
2—84" Apron Belt Conveyors 20' long  
1—48" Troughing Belt Conveyor 25'  
15—24" Troughing Belt Conveyors 18' to 150'  
6—18" Troughing Belt Conveyors 35' to 80'  
30—Steel Bins and Hoppers from 50 to 200 ton capacity  
Send for Complete Specifications

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Every Item Priced for Quick Sale

### BRILL EQUIPMENT COMPANY

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St. Tel: JACKson 6-1351

7—Euclid bottom dumps 43-FDT & 58-W.  
16—Euclid 9 LDT center dump semi-trailers.  
65 ton & 25 ton G. E. std. ga. locomotives.  
Pioneer crushing plant 956 jaw & 3018 roll.  
Iowa 10 x 36 port. primary crushing plant.  
Pitmaster plant 10 x 16 jaw & 16 x 16 roll.  
80 x 42 r. b. Pioneer jaw, new 1954.  
1600 cfm compressor, 360 hp, 440 v.  
B. E. 37-B shovel-dragline—CHEAP.  
N. W. 80-D dragline, 8700 series ..... \$12,500  
P & H 1055 shovel-crane-dragline, 3½ yd.  
Three—American stuffing derricks 856-50, 80' boom, 6 tons at 78' radius, 100 hp.  
30 ton Lima & 25 Kohring truck cranes.  
314 KV Cat. D-397 generator 3/60/440.  
938 KYA G.M. diesel generator. 200 hp, 2400 v.  
54" x 16' Stephens Adamson manganese feeder.  
24" x 1800' Barber Grease truss conveyor.  
8' portable dredge, ladder, cutter head.  
Rex double pumpecrete model 200, 50 hp.  
9470 ft. Aerial Tramway, 50 tpb, 65 buckets.

Stanley B. Troyer Equipment Co.

Box 97, Phone 500, Crosby, Minnesota

### FOR SALE

1—34E duel drum Kohring paver in good condition ..... \$13,000  
2—two cu. yd. Smith mixers ea. .... 250  
1—28' by 66" Asphalt dryer ..... \$3,500  
1—Clarage #137 fan used only 250 hours (64" wheel ..... 1,500  
1—American Blower fan, 60" wheel ..... 450  
1—American Blower high pressure blower with fluid drive and Hauck 756 combination oil and gas burner. This burner operates on 2# gas pressure 60 hp. electric motor included ..... 1,300

### WANTED

1—4 by 10' Robbins vibrex screen with two decks  
1—150 hp. electric motor at 1200 rpm. Also start-er 220 volt  
1—100 hp. electric motor at 1000 rpm. Also start-er 220 volt  
Jeffrey vibrator feeders capacity fifty tons to two hundred per hr.

TYLER READY-MIX CONCRETE  
AND ASPHALT CO.  
Box 1046, Tyler, Texas

### SPECIALS

1—4 x 20—8 x 125' Kilns

### DRYERS

6' x 60'

### CRUSHERS

1—30" x 36", 24" x 36", 18" x 36", 15" x 30", 12" x 24" Jaw Crushers.  
2—42" x 16" Allis-Chalmers Crushing Rolls, rebuilt. 36" x 16 rebuilt Sturtevant rolls.  
2—24" x 12" Rogers Iron Works Crushing Rolls, Rebuilt.  
1—6", 10", 16", 20" McCully Superior Gy-ratory Crushers.  
No. 3 up to No. 12 Gytratory Crushers.

### BALL & TUBE MILLS

2—6½' x 20', 6' x 22', 6' x 22' & 7' x 24'.

### MISCELLANEOUS

"H" O Raymond Mills.  
Bradley Mills.

We make new dryers and kilns.

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.

50 Broad St., N.Y.

Tel. Wh. 4-4236

1—24 Champion Jaw Crusher 9" x 15"  
2—24½ Champion Jaw Crusher 10" x 20"  
1—Allis-Chalmers Jaw Crusher, Blake Type 10" x 20"  
1—Reliance Jaw Crusher 15" x 30"  
1—36" x 20' Revolving Screen  
1—36" x 11' Revolving Screen with Scrubber  
1—30" x 14' Revolving Screen  
1—3' x 5' Link-Belt Foundry Shakeout Screen  
1—10" x 20" New Holland Hammer Mill NEW All-Steel & Manganese J. & H. Hammer Mills 5½" x 18"  
2—NEW B-G 15" x 36" Bucket Elevators on chain with 10 H.P. new gear head motors  
1—18" x 25' Portable Belt Conveyor

JOHNSON & HOEHLER, INC.

P. O. Box 152, Lansdowne, Pa.



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### QUARRY EQUIPMENT

Cedarapids 3030 double impeller. Rebuilt.  
Cedarapids 1835 twin jaw crusher. Good.  
Cedarapids 1835 roller bearing jaw crusher.  
Cedarapids 4833 hammermill. Rebuilt.  
Cedarapids 2833 hammermill. Rebuilt.  
Telsmith 24" cone crusher. Good.  
Cedarapids 4' x 12' double deck screen. Rebuilt.  
New Holland 4' x 12' double deck screen. Rebuilt.  
Pioneer 4' x 8' double deck screen. Rebuilt.  
Smithco 24" x 60" portable belt conveyor.  
27½ ton, single-compartment 8' x 12' bin.  
6-ton, two-compartment, 8' x 18' storage bin  
with clam gates.  
100-ton, two compartment, 12' x 22' bin.  
Special bins to your specifications.  
Conveyors—18"—24"—30"—36". Also conveyor  
belting.

### SHOVELS AND CRANES

Lorain 820 3-yd. diesel shovel-cranes.  
Lorain 82 2-yd. diesel shovel.  
P & H 855B-LC, 3-yd. diesel shovel.  
Lorain 78-J 1½ yd. diesel dragline.  
Lorain 78 1½ yd. diesel shovel.  
P&H 655B 1½ yd. diesel dragline.  
Bucyrus-Erie 38B, 1½-yd. diesel dragline. Re-  
built.  
Lorain L-80J 1-yd. Diesel clam-cranes.  
Lorain L-41 ¾-yd. diesel backhoe.  
Link Belt LS-88 ¾-yd. diesel shovel-drag.  
Lima 34 Paymaster ¾-yd. diesel shovel. Good.  
Unit 1020 ¾-yd. diesel powered shovel-cranes.  
Lorain L-40 ¾-yd. diesel crane.  
Lorain TL358 ¾-yd. gas clam-cranes.  
Inaley K-12 ½-yd. gas dragline. As is.  
Koehring 304 ¾-yd. diesel shovel-hoe.  
Koehring 304 ¾-yd. diesel backhoe.  
Buckeye 70 ¾-yd. diesel shovel.  
2—Lorain MC-414 20-ton Moto-Cranes.  
Link Belt HC-90 25-ton truck crane.  
Lorain MC-4 15-ton Moto-Crane.  
Lorain MC-3 12½ ton gas moto-cranes.  
Lorain TL-20 10-ton gas moto-cranes.

### TRACTORS, TRUCKS, SCRAPERS, ETC.

6—Euclid T8-24 twin engine scrapers.  
4—Euclid 18-yd. overhung engine scrapers  
1—Euclid 18½-yd. six wheel scraper.  
1—Euclid 12½-yd. bottom dump, power steering  
1—Euclid TC-12 twin engine tractor.  
2—Euclid 15-ton rear dumps. Excellent.  
1—Mack L58 18-ton rear dump.  
5—Euclid 10-ton rear dumps. Excellent.  
1—Pullman S-800, 8 to 9 yard scraper.  
1—Caterpillar DW-10 scraper.  
1—Allis Chalmers HD-10 tractor with hydraulic  
bulldozer blade.  
1—International TD-14A tractor with PCU.  
1—International TD18 with Bucyrus-Erie bul-  
dozer blade. Excellent condition.  
4—Euclid tractors with 3200 gallon water tank  
semitrailer.  
1—Caterpillar D-7 with cable bulldozer blade.  
1—Caterpillar D-6 with Hydraulic Angle dozer  
blade.  
1—Caterpillar D-4 Tractor only  
1—Caterpillar D-7 with Acon 10½-yd. scraper.  
1—Caterpillar D-8 with cable bulldozer blade.  
1—Austin Western diesel powered grader.  
1—Adams diesel powered grader.

### SHOVEL ATTACHMENTS

Lorain 820, 3-yd., 23' boom, 21' stick.  
Lorain 80, 1-yd., 21' boom, 17' stick.  
Lorain 40, ¾-yd., 18' boom, 16' stick.  
Lorain 30A, ¾-yd., 18' boom, 12' stick.  
Cagood 303, 3-yd., 24' boom, 20' stick.  
P & H 855, 2-yd., 24' boom, 17' stick.

### BACKHOE ATTACHMENTS

Lorain 40A, 18' boom, 7' stick, 38" or 44"  
bucket.  
Koehring 304, 18' boom, 5' stick.

### DIESEL POWER UNITS

Cat. D7790, 74 H.P. at 1000 RPM. Rebuilt.  
Cat. D8800, 88 H.P. at 1000 RPM.  
Cat. D13000, 128 H.P. at 1000 RPM. Rebuilt.  
GMC Twin Diesel, rebuilt.  
GMC 3631C, 3-cylinder, new.

### AIR COMPRESSORS

165 cu. ft. Ingersoll-Rand gas portable.  
125 cu. ft. Jaeger gas portable.  
800 cu. ft. Ingersoll-Rand, Waukesha power.  
800 cu. ft. Gardner-Denver diesel portable.  
420 cu. ft. Gardner-Denver two-stage stationary.  
Rebuilt.

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Phone Harrisburg REgent 7-3431

## JAW CRUSHERS

60"x48" to 6"x3"

New and used **RELIABLE**



"Farrel-Bacon"  
Jaw Crushers

**BACON-PIETSCH CO., INC.**

26 Park St., Montclair, N. J.

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### SHOVELS, CRANES & HOES

Inaley "K-12" ¾ yd. Dragline or Trench  
Hoe, Reconditioned .....\$6250  
Marion "331" ¾ yd. Used Shovel or Drag-  
line .....\$4500  
Byers "83" ¾ yd. Used Dragline, 40'  
Boom .....\$5750

### TRACTORS & LOADERS

Terra Trac "500" Front End Loader, hydrau-  
lic scarifier, like new .....\$4500  
Allis-Chalmers "TLW" Used Tractor w/  
Tractomotive Front End Loader, ¾  
yard .....\$2000

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Rex 6½ Yd. Adjusta-Wate Moto-Mixer.  
Chrysler power, open end, very clean \$3000  
Rex 8 Yd. Hi-Discharge (4¼ yd. Agitator)  
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Truck .....\$2000  
Jaeger 4½ Yd. Hi-Discharge (6 yd. Agita-  
tor) mounted LF174 Tandem .....\$3800  
Smith 3 Yd. Hi-Discharge (4¼ yd. Agitator)  
mounted Chevrolet tandem axle truck  
\$1750

### MISCELLANEOUS

Universal "1824" R.B. Jaw Crusher, re-  
built 1956 .....\$3500  
Universal "916" R.B. Jaw Crusher ...\$750  
Grundler Port. Pulverizing Plant, 3 x 8  
Feeder, 3 x 8 mill, discharge conveyor,  
G-M 671 Diesel power, 8 months old  
\$22,800  
Dixie Port. Pulverizing Plant, 3 x 8 feeder,  
3 x 8 Iowa screen, 3036 mill, discharge  
conveyor, GM-671 Diesel power, complete-  
ly overhauled .....\$24,000  
Pettibone-Wood "820A" New Windrow Pro-  
portioner, reduced for quick sale.  
Pettibone-Wood "P620" Used Preparerizer.  
G-M Diesel power. Will rent or sell.

NOTE: All This Equipment Located in our Yard.

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### EIGHMY EQUIPMENT COMPANY

Rockford, Illinois

Complete staty **STONE PLANT** w/2436 Jaw, 2XB  
mill, ¾ yd shovel, feeder, power tractor. Part or  
all midwest. Many other **PORTABLE** plants.  
**CRUSHERS:** 1036, 1538, 1836, 2036, 2138, 2340,  
3042, 3612, 4248, 4836 JAW. 10", 16", 18", 20",  
McClure, 2½", 20" & 4" Traylor, 18", 24", 28",  
36", 25B Telsmith, 12", 37½ KVS, 12K GYR.  
5424, 4022, 3018 ROLL, 2", 3" & 4" CONES.  
**DRYERS:** 3x20, 5x40, 6x60, 8x125, 7x60, 8x124.  
**CONVEYORS:** 24x76, 24x30, 24x115, 30x60, 36x151.  
**MILLS:** 4x6 KVS air swept, 7x6, 3"x3", 6x15 Ball.  
3½x7 Rod. Raymond 66", Williams Comet &  
Onore Roll, 5x22 Tube, 36x2 Jeffrey Hammer.  
**WASHERS:** Hardinge 8"x18" Scrubber, Eagle 24x18,  
27½x15, 24x22, 30x15 Srew.  
**DREDGES:** 6", 8", 10". All types pumps  
**SHOVELS & DRAG:** NW25, 6, 7BD, 80D, 95,  
Marion 40A, 382, 373, 43M, Manitowoc 2000B,  
3500, 4500, B.E. 15B, 22B, 29B, 38B, 44B, 54B,  
88B, 120B, 320B, 200W, Lima 24, 1201, Lorain  
820, Link Belt 85, 360, 505, P&H 855, 1055.  
Repres: Bonded Scale & Machine Co.  
**MID-CONTINENT EQUIPMENT CO., INC.**  
8321 Gannoe—St. Louis 24, Mo.—Wdown 1-2826

### Ingersoll-Rand Tungsten-Carbide Bits

**NEW**

**Discounted 40%**

Size	Thread	Qty	Price
2¼"	2	60	\$16.00
2"	2	60	14.00

Entire Lot \$1200

### AESCO

811 Lehmann Bldg., Peoria, Ill.

**COLLECTOR**—Ducon Cyclone 11,000 CFM  
**CRUSHER**—Walker-Elliott Fine Rotary  
Crusher

**HAMMERMILL**—S-6 Penna. 42" x 32"

**ELEVATOR**—90' Open Inclined with buck-  
ets between two strands of chain.

**PUG MILL**—Chambers 30" x 147"

**GRIZZLY ROLLS**—Steel Frame contains 6  
live rollers 12" dia. x 36" long.

**PAN CONVEYORS**—24" x 18' - 30" x 33'  
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**SCREEN**—5' x 7' Rotex Sifter Model 421

**SHOVELS**—L77 Lorain 1½ yd. and L57  
Lorain 1¼ yd. Both excellent

**SEPARATOR**—Dings Magnetic Cross Belt  
for granular materials.

**MOTOR**—200 HP, 875 RPM GE Slip Ring.  
Also 25 other motors 3 HP to 75 HP  
Squirrel Cage All 440/3/60

### G. & W. H. CORSON, INC.

Plymouth Meeting, Pa.

### FOR SALE

**ALLIS-CHALMERS BALL TUBE MILLS**, 5'6" x  
22' L, 150 HP.  
**ALLIS-CHALMERS 7' x 24' COMPEB MILL**, 450  
HP, two-compartment.

**MARCY ROD MILL**, 4' x 10', 75 HP.

**RAYMOND Pulverizer** 66" dia., 6 roll.

**BUYRUS Revolving SHOVELS**, Models 50-B,  
320-B.

**ROTARY DRYER & KILNS:** 8' x 125', 9 x 30, 7 x  
60, 6' x 50', 4'6" x 40', 4' x 30', 3' x 15'.

**ROTARY COOLERS:** 104" x 30', 104" x 70',  
Submerged Type, UNUSED.

**KENNEDY VAN SAUN GYRATORY CRUSHER**,  
12" gearless, #37½.

**INTENSIVE MIXERS**, 3', 4', 6' dia.

**BROOKVILLE Locomotive**, 8 Tons.

**CEMENT PLANT** 1,200,000 Bbl. yearly capacity  
with 4 De Roll Vertical Kilns.

**CONCRETE PLANTS**, 400 cu. yd., 150 cu. yd.

WE WILL PAY CASH FOR

GOOD USED EQUIPMENT

### PERRY EQUIPMENT CORP.

1418 N. 6th St., Phila. 22, Pa.

POplar 3-3505

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**COMPRESSORS** **MILLS**  
**CONVEYORS** **MIXERS**  
**CRUSHERS** **POWER EQPT.**  
**DRYERS** **SCREENS**

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### HEAT & POWER CO., INC.

ROCK PRODUCTS EQUIPMENT DIV.

60 East 42nd St., New York 17, N.Y.

310 Thompson Bldg., Tulsa 3, Okla.

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Complete Construction and Red-i-Mix  
Concrete business consisting of the follow-  
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pressors, Pumps Low bed Trailers, many  
small tools. No reasonable offer refused  
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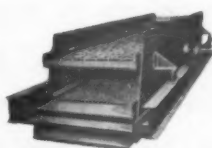


# BONDED EQUIPMENT BARGAINS

NEW CURRENT MODELS IMMEDIATE SHIPMENT FROM OUR FACTORY  
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## NEW BONDED® HEAVY DUTY VIBRATING SCREENS

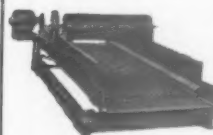
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HEAVY DUTY MODELS, TYPE B: Four bearing positive throw eccentric shaft; 5' x 6' to 5' x 14', 1 to 5 decks. WRITE FOR NEW 6-PAGE BULLETIN NO. 1087.

Model Number	No. of Decks	Screening Area	Sale Price
124A	1	2'x4'	\$ 449.00
224A	2	2'x4'	472.00
126A	1	2'x6'	472.00
226A	2	2'x6'	501.00
136A	1	3'x6'	581.00
236A	2	3'x6'	688.00
336A	3	3'x6'	956.00
138A	1	3'x8'	675.00
238A	2	3'x8'	815.00
338A	3	3'x8'	996.00
336B	3	3'x6'	1620.00
436B	4	3'x6'	1685.00
138B	1	3'x8'	1510.00
238B	2	3'x8'	1620.00
338B	3	3'x8'	1735.00
248B	2	4'x8'	2310.00
348B	3	4'x8'	2460.00
2410B	2	4'x10'	2550.00
4410B	4	4'x10'	2550.00
2412B	2	4'x12'	2590.00
3412B	3	4'x12'	2970.00
4412B	4	4'x12'	3165.00

## NEW BONDED® GENERAL DUTY VIBRATING SCREENS



More than 6000  
Mines and Quarries  
have modernized  
with  
Bonded Equipment

GENERAL DUTY SCREENS, TYPE A: Eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. WRITE FOR NEW 6-PAGE BULLETIN NO. 1086.

For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals, including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry.

## NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Remember,  
You Save  
Up To  
50%



CONVEYOR PRICES  
INCLUDE BELTING

Complete Pre-Fab sections of 3" Jones & Laughlin Jr. I Beam Frame Conveyors quickly and easily joined together on the job. These beams are rolled with .20% Copper Content. Atmospheric exposure tests disclose that Junior Beams, with .20% Copper have as much as four times the resistance to corrosion as non-copper steels. Braced with structural angle, welded to frame for maximum rigidity. Equipped with 6" roll diameter idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley, mounted on 2 1/2" or 2 3/4" diameter shaft.

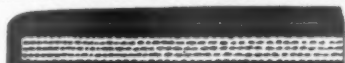
We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck 1/4" top rubber cover x 3/8" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers.

A full line of accessories available, including carrying and return belt covers. WRITE FOR BULLETIN #1138.

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Ft.
14"	25'	\$1397	\$ 722	
14"	50'	2323	1144	\$16.84
14"	85'	3377	1733	
16"	20'	1262	630	
16"	45'	2137	1086	
16"	60'	2662	1359	18.04
16"	90'	3712	1900	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	
18"	85'	3697	1933	19.24
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2852	1533	
20"	75'	3467	1838	20.37
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1350	
24"	70'	3480	1875	
24"	100'	4740	2514	21.78
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	
30"	70'	3871	2119	24.75
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1478	
36"	60'	3688	2096	27.95
36"	100'	5718	3214	

## NEW CONVEYOR BELTING SAVE UP TO 30%

WE PAY FREIGHT ON 200 POUNDS OR OVER



Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile. Heavy Duty 4-ply, 28-oz. duck, 1/4" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	\$3.63	\$3.83
16"	4	4.08	3.97
18"	4	4.51	3.29
20"	4	4.97	3.90
24"	4	5.86	4.36
30"	4	7.18	5.21
36"	4	8.51	6.18

Major Bee Brand: 16# to 19# Average Friction Pull. 2500# to 3000# Average Cover Tensile. Skim coat between plies.

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, 1/4" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	\$4.31	\$3.66
16"	4	4.85	3.46
18"	4	5.39	3.83
20"	4	5.90	4.37
24"	4	6.94	4.94
30"	4	8.53	6.97
36"	4	10.09	7.35
24"	5	8.14	6.78

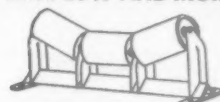
Other widths, plies, duck weights and cover thickness available at low prices. WRITE FOR FREE SAMPLE AND BULLETIN #1209.

## NEW BONDED® FEEDERS



For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may be driven from Troughing Conveyors. All models available in abrasion resistant alloy steel plate. Capacities to 440 tons per hour. WRITE FOR BULLETIN #1211. Priced From .....\$224.00

## NEW IDLERS AND RETURN ROLLS SAVE 25% AND MORE



3-roll, 5" diameter Troughing Idlers for:  
14" belt \$13.50 24" belt \$21.35  
16" belt 19.25 30" belt 23.90  
18" belt 20.50 36" belt 23.75  
20" belt 20.75 48" belt 25.50

1-roll, 5" diameter Return Idlers for:  
14" belt \$7.25 24" belt \$ 5.50  
16" belt 7.50 30" belt 8.50  
18" belt 8.00 36" belt 10.00  
20" belt 8.25 48" belt 11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greaseable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers priced from \$61.00. WRITE FOR BULLETIN #1138.

## NEW BONDED® BUCKET ELEVATORS



Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models mean lower prices and you get a Custom Built Elevator at no extra cost.

There is a style of bucket for virtually every material or condition: wet or dry, lumpy or fine, granular, silvery, or pellet shapes, hot or chemically active. Prices listed below are for Vertical Enclosed Elevator. Other sizes, styles, and types available in both chain and belt type elevators, at equally low prices and will be quoted on request. A complete line of Continuous Steel, Salem Steel and Malleable Iron Buckets available in a wide variety of sizes, shapes, gauges and styles at low prices. WRITE FOR BULLETIN #1209.

Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets On Belt			
B3EA	8x3 1/2	\$1890.00	\$29.50
B3EA	6x4	1116.50	31.25
B3EA	8x5	1311.50	27.25
B10EA	10x6	1692.50	33.00
B12EA	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7/8	\$1297.00	\$31.25
C120E	12x6x1 1/2	1599.00	34.25
C100E	10x5x1 1/2	1484.00	34.75
C128E	12x8x1 1/2	1854.00	35.50
C148E	14x8x1 1/2	1710.00	36.75

## BONDED SCALE AND MACHINE COMPANY

PHONE Days: Hickory 4-2186  
128 Bellevue

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Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

COLUMBUS 7, OHIO

**SPECIAL ITEMS**

Iowa 53"x60" dbl. Impact hammermill  
Telsmith 25B Gyratory Crusher  
Sturtevant 16" air separator 75 HP elec. motor  
Pangborn C-12, exhaust blower, etc.  
Traylor 56"x72" sectional frame jaw crusher  
Traylor 4' Model TY crusher. Numerous spare parts.  
Sauerman 2 yd Cableway 300' 150 HP elec. motor

**STEAM GENERATORS SELF CONTAINED**

Superior 200 HP 150 PSI, all Codes.  
Littleford On-Off KWIK Package type  
Cleaver-Brooks 50 HP Package type 100 PSI  
Cleaver-Brooks LFM-8 80 HP 100 PSI Pack. type.  
Cyclotherm MC 80 Pack type 100 PSI

**CONCRETE MIXERS**

Ransome Model 448, 3 yd. tilting type  
Smith 422, 4 yd. tilting type  
Koeberling 548 2 yd. tilting type

**TRANSIT MIXERS**

Worthington 7 yd. High Discharge 1956 Mack Diesel  
2 Int. L.F.-192-Blaw-Knox 6 1/2 yd. 1953

**CRUSHERS-KILNS-DRYERS**

**JAW:** Arcene 10x20, 15x36, 14x28, 10x42, 18x32, 18x32, 25x40, Eagle 10x18, 30x36, Diamond 21x36, Cedar Rapids 10x20, 15x36, 20x36, 25x40, Farrell 10x20, 18x30, 14x36, 18x36, 36x48, Buchanan Type C 30x42, 50x42, Traylor 18x36, 24x36, Aills-Chalmers 30x18, Good Roads 10x30, Telsmith 18x32, Pioneer 30x42, Universal 18x34.

**GYRATORY:** Al-Chal 322, 6' 7 1/2", 8, 9, 9K, 10, 16, 20, 30, 42, Telsmith 418, 25" Intercone, Kennedy Van Saun 7, 12, 25 1/2", 37 1/2", 50", Traylor TY 1' 8", 4' Type TS, TY 3', T2 3', T23'.

**ROLL:** Cedar Rapids 40x20, Pioneer 40x22, Pioneer 30x18, Telsmith 24x16, Universal 40x24, 18x30.

**HAMMERMILL:** Jeffrey Type BS 24x20, Type B 36x24, 36x36, 36x42, Eagle 24x24, Steadman 24x30, 36", 42", Cedar-Rapids 50-50, 30x33.

**BALL MILL:** Hardinge conical 10'x18", 8'x18", 4'x36", complete, motors, spare parts

**TUBE MILLS:** Smidth 6'0"x21", 5 1/2"x30", 4'x36", complete, motors, spare parts

**ROD MILL:** Marcy 3'x8" center discharge Marcy 3'x6" Denver 3'x8" center discharge

**AUTOCLAVES:** Jackson & Church 6'x50" batched, CONE: Symons 20", 2', 3' Telsmith 25"

**KILNS:** 4'x42", 5'x30", 6'x50" 6", 6'x45", 6'x72", Vulcan 9x106, 10'x105", 8'x124", 6'x90", 6'x72", 6'x30", 6'x60", 6'x72", 5'x34", 4'x30", 3'x30", 6'x30"

**COMPRESS MILLS:** A-C 7'x24", Patterson 7x18.

**CRUSHING PLANTS**

Austin-Western Mdl. 1818 Port. Complete 10x36 jaw crusher Diesel powered. New 1955  
Diamond 77, new 1956, 10x36 jaw crusher, roll crusher, complete Portable.

Pioneer Port. 10x24 jaw crusher, 24x16 roll crusher, complete Diesel.

Cedar Rapids 20x36 jaw crusher Cat. D8800 Diesel power, 40x22 triple roll crusher.

C-B 2540 Prim. Port. Diesel

Eagle washing plant, classifier sand screws, screen.

C-B Primary Port. 22x36 Jaw. Diesel.

C-B WASH-ALL Screening-washing. Complete.

Eagle 36x25" single screwspiral flights washer classifier dehydrator

**CONCRETE PLANTS AND EQUIPMENT**

Johnson 400 yd 5 agr. 1500 bbls. cement batch 5000 bbl. silo 3-2 yd mixers

Johnson automatic batch 10,000 bbls. cement storage 3-2 yd mixers; screening equipment.

Johnson TY 228 2 compl. agr. w/TY1320 cement unit Blaw-Knox 100 100 3 compl. aggregate bin

Blaw-Knox BCPC 400 bbl cement silo

B-K BCPC 400 bbl High cement bin 400 bbl silo.

Blaw-Knox BCPC 300 bbl cement bin

Auto-Crete port. batching plant, self contained, elec. up to 150 yds per day; one man operation.

Fuller Type U200 rotary vacuum pump 27".

Fuller Type V-70 rotary vacuum pump 25".

Fuller 10" air slide cement system.

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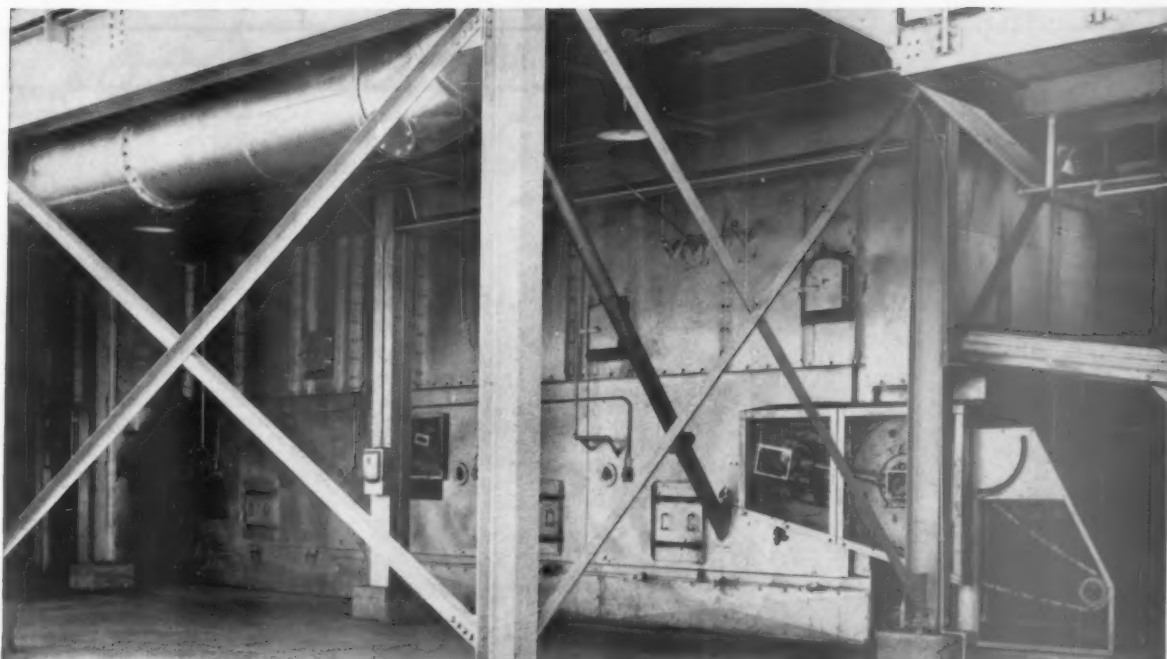
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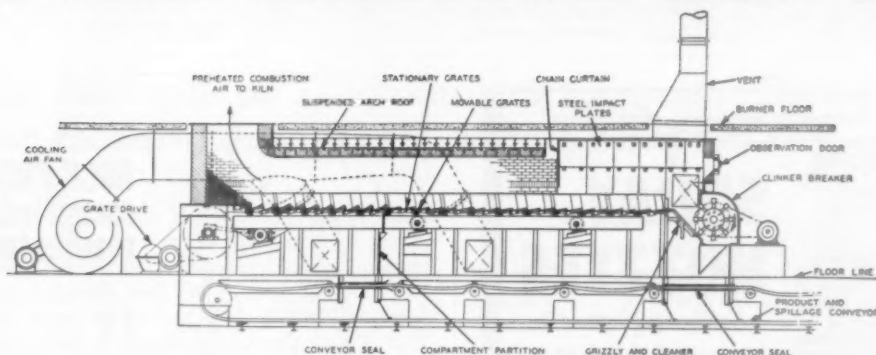
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Cross-section drawing showing construction and arrangement of a typical Horizontal-Grate Cooler with clinker breaker.

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### Features of the Fuller HORIZONTAL-Grate Cooler

Requires a minimum of headroom  
Short length if necessary  
Better secondary air temperature control  
Less refractories

Less installation time  
More rapid clinker distribution  
More uniform bed thickness  
Improved recuperation and cooling



4878  
CO-39

"See Chemical Engineering Catalog for details and specifications".

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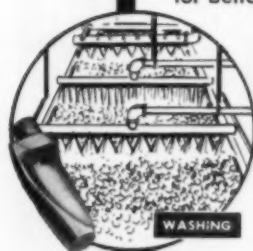
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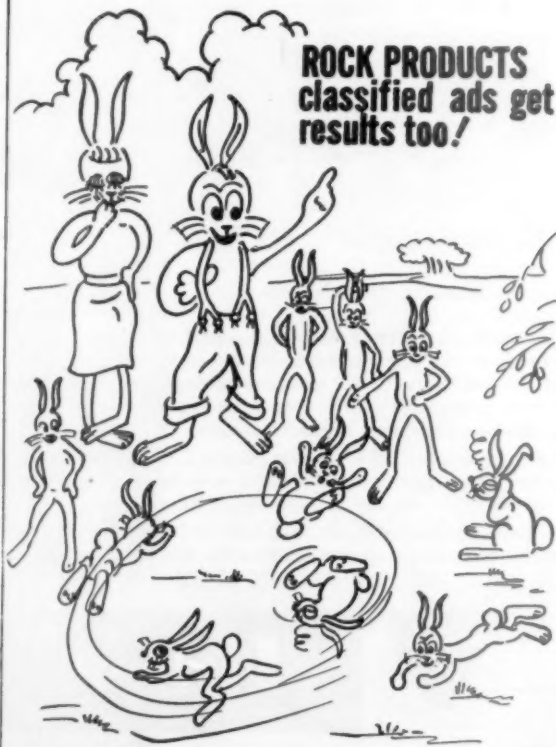


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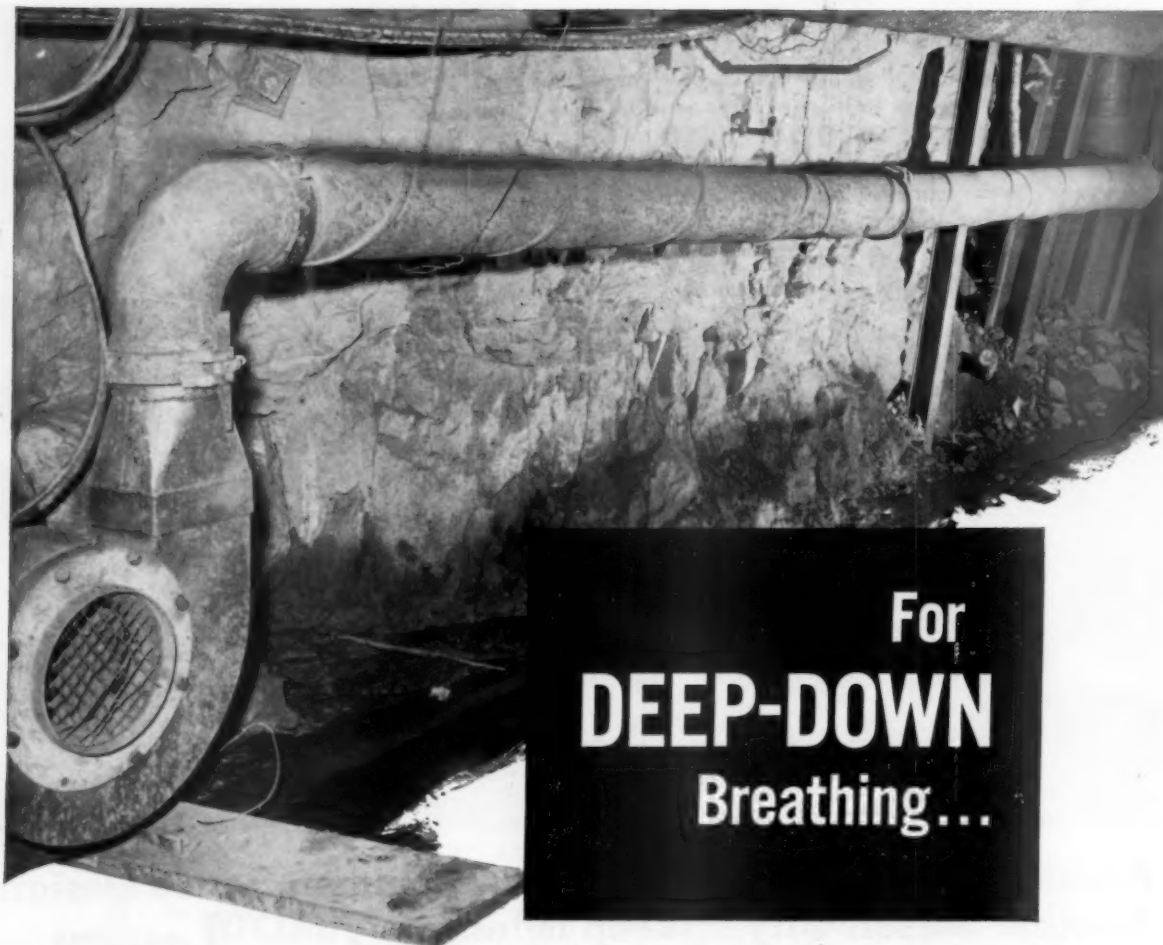
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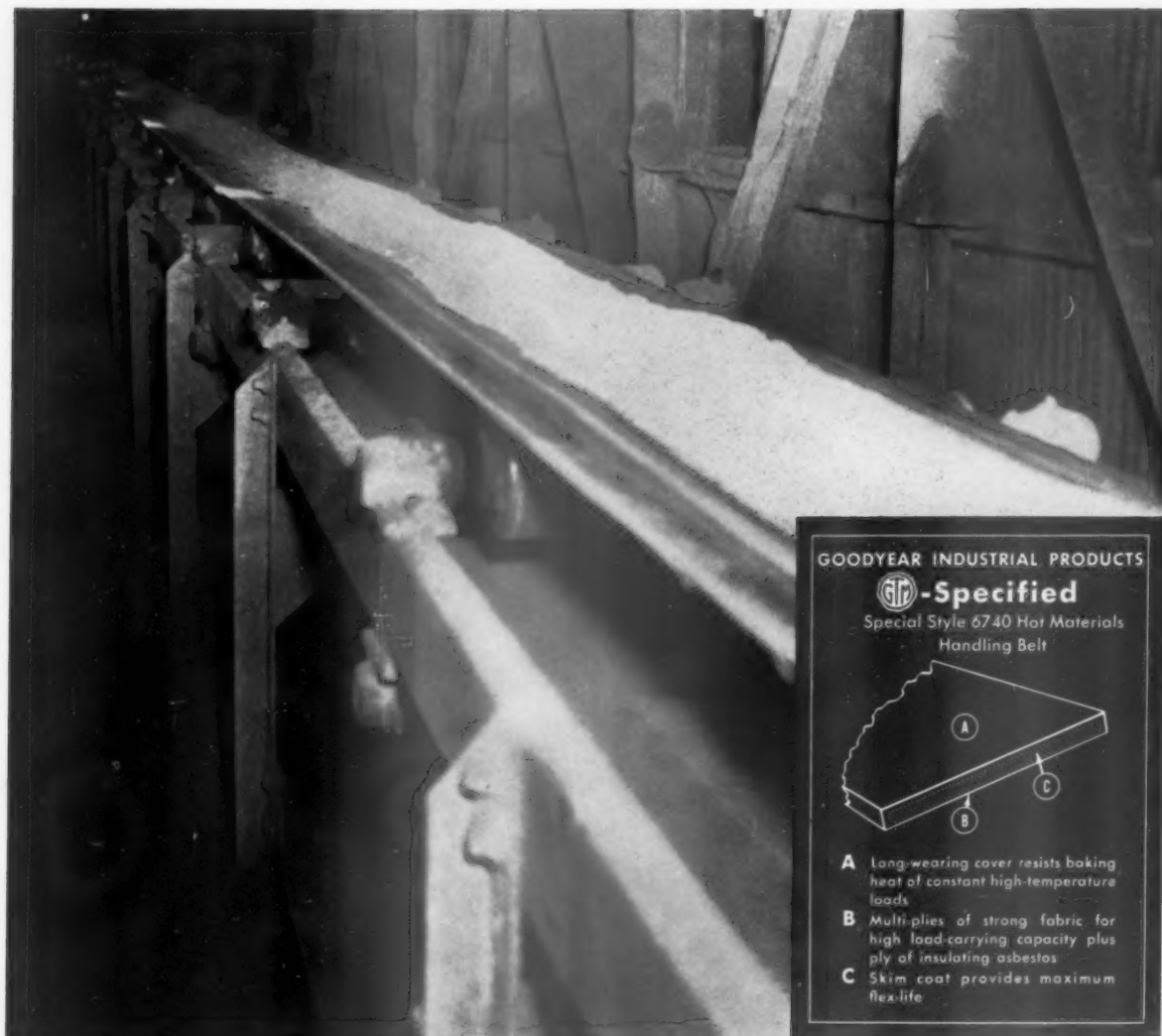
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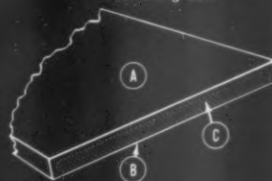


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